# Pests

AND THEIR CONTROL

1941

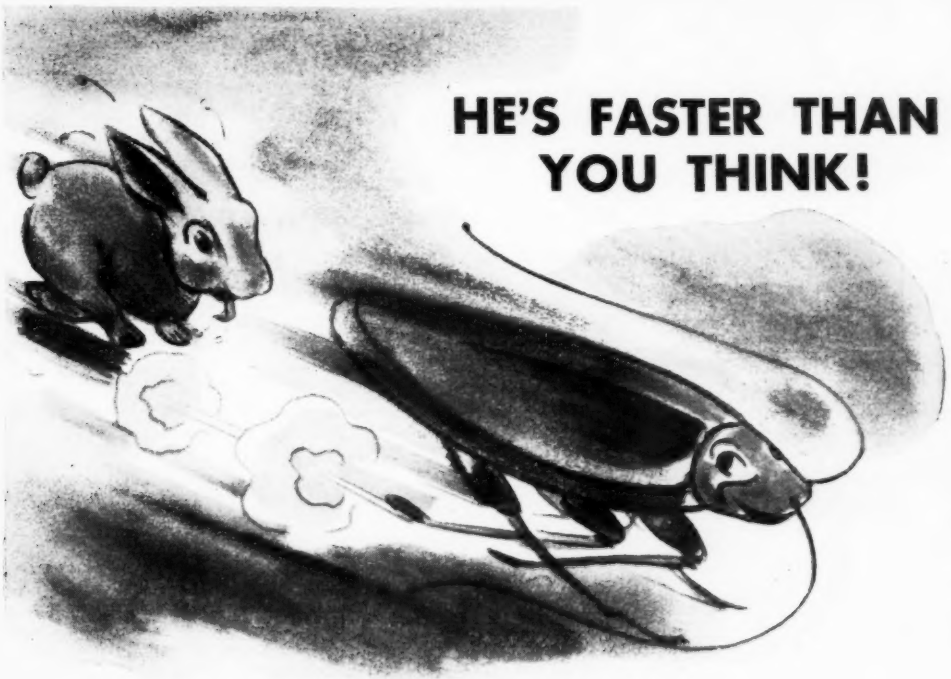
MARCH

VOL. 9 NO. 3

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators
Fumigators
Termite Control Operators
Entomologists
Insecticide and Supply Mfgrs.





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# Pests

and Their **CONTROL**

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

*Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers*

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**STATEMENT**

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

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**3019 Fort Hamilton Parkway** — **Brooklyn, New York**


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*"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."*


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# EDITORIAL

## Program of Proper Public Relations Proposed for Pest Control Industry

EVER on the alert for ways and means to enhance the welfare of the pest control industry, Walter S. McCloud, George R. Elliott, Bill Buettner and others, have again come forward with an idea of much merit. Their thought stems from the necessity for an educational program concerning Public Relations and the manner in which it can be made best to serve the industry.

Added confirmation of this need was indicated in a communication from G. C. Oderkirk, District Agent, Division of Predator and Rodent Control, Fish and Wildlife Service, U. S. Dept. of the Interior, Lafayette, Ind., whose comments below require no amplification.

> **"In talking with pest control operators in various cities concerning their method of operating, I find considerable variation in the manner in which these men place their work before the public. Many of the men are handling problems of public relations in a commendable manner, but it would not be an error to say that a great majority of the individuals in the industry could benefit by advice on this problem."**

The meaning of the phrase "Public Relations" has been very much of a football in recent years. It's been a case of write your own ticket, and no questions asked. Of this we are certain however, the P.C.O. does not operate in a vacuum. He has daily contacts and over a period of time with: 1. his personnel; 2. his customers; 3. his prospects; 4. Government and university entomologists; 5. supply houses, etc. The manner in which such relationships are maintained may very properly, we think, come within the scope of what is intended by the term Public Relations.

Elsewhere in this issue appears an address delivered by Edwin C. Craig, Executive Vice-President of the National Life and Accident Insurance Co., entitled BUSINESS REQUISITE—PROPER PUBLIC RELATIONS. According to Mr. Craig, Public Relations is nothing more nor less than the art of getting along with people.

Paul Garrett, Public Relations Director, General Motors Co., inclines towards the view that:

> **"Public Relations is not something that can be applied to a particular phase of a business—nor is it a sort of umbrella covering everything, but touching nothing. It is rather a fundamental attitude of mind, a philosophy of management, which deliberately and with enlightened selfishness places the broad interest of the public first in every decision affecting the operation of the business."**

So much for trying to straightjacket the meaning of "Public Relations." Proper utilization by the industry of such a program is the next question to be considered. The first article on Public Relations by Mr. Craig which, as previously indicated, appears in this issue, does not concern itself with the pest control industry as such though, of course, it has direct implications thereto. Other articles in subsequent issues will be of a more specialized pest control nature. More concretely, our May issue will have an article by Martin T. Meyer, General Manager, Theodore Meyer, Est., Director of N.P.C.A., entitled "THE RESTAURANTEUR AIDS THE P.C.O." The April issue will present some interesting observations by J. M. Miller, of the J. M. Miller Pest Control System, on "WHY A CHARGE FOR TERMITE INSPECTIONS SHOULD BE MADE," etc. Reprints of such material will be made available at a nominal cost for distribution to your customers and prospects. Or if you prefer, we will grant permission for photo offset reprints through your local facilities providing "credit line."

Your co-operation in making ample use of such reprints will help create a better understanding of the important function that the industry is performing. Indubitably the program will also tend to strengthen P.C.O. —personnel—customer—prospect—entomologist and supply house relations.

Write us, if you will, what you think of the plan. Needless to say your criticism and suggestions for subject material of future articles will be given consideration.

## Intra-Industry Regulation Best

IN a recent issue of Advertising Age an account is rendered of the baby chick industry in which advertising to the tune of more than $1,500,000 a year is involved. Because the industry is a rapidly growing one, the problems of advertising control have been serious. But this industry, through its association, functioning through a fair trade practice committee, has established its own method of working with offenders, and as a result has cleaned up the advertising situation, with corresponding benefits not only to the members of the industry but to the public as well.

This should be a satisfactory answer to critics of advertising who regard government regulation as the only satisfactory answer to the problem of copy control.

The N.P.C.A. and its membership should be commended for its recognition of the importance of self-regulation, particularly with regard to the standards or formula of various control procedures as well as Publications Review and Literature and Research program discussed and acted upon at or since the recent convention at Indianapolis. Obviously it all ties in directly with any advertising done by members of the industry individually or collectively. Eschewing any desire to be "preachy," we would like to add, the primary progress of any industry or profession depends upon a willingness to co-operate for effective self-regulation. An effective start has been made—and much can be accomplished with your continuing good will and effort.

## Research

THE National Pest Control Association is to be commended for the efforts being put forth to have more impartial research done in the household and structural pest control field. The crux of the needs is expressed in a statement submitted to the Congressional Committee on Appropriations:

> "In the interests of the public at large in that impartial research of household and structural insects and pests may be undertaken by the Bureau of Entomology and Plant Quarantine, we ask that an appropriation of $20,000 to $25,000 be provided to make possible the employment of at least three men, provide necessary equipment and thus correlate findings, including field observations, that will make possible satisfactory measures for the elimination and control of destructive property damaging insects and pests and aid in the protection of health as well as to cope properly with these obnoxious and abhorrent insects, pests and vermin."

The analysis of the situation published elsewhere in this issue speaks very plainly and we urge that every P.C.O. take enough time out to write to his local Congressman urging that he support a program that will bring about the desired appropriation.

## Be Thankful for Your Competitors

***A laugh was caused at the Chicago convention of the U. R. C. A. by the distribution of a card which confidentially informed the roofer that his competitors were a bunch of "so and so's." There's a great deal of good sound commonsense in this article which exhibits another side of competition.***

YOUR competitor may take one of your "sure" orders, but by working with him he'll create orders for you which you probably wouldn't have otherwise received. In the 90's a statement such as this would have been considered absurd. In those days of cut throat competition businessmen resorted to every unethical means imaginable to ruin their competitor. The pickle salesman always carried a pocketful of nails handy for the purpose of dropping them into the barrel containing his competitor's pickles. And the typewriter salesman, by a few manipulations on the sly with a screwdriver could easily prove that his competitor's machine was mechanically inferior. The goal of many business men was to "knock out" their competitor.

### Clean Competition

But today things have changed. American business realizes what is now an accepted truth—**that clean competition makes for more business.** Today most large businesses welcome the opportunity of sharing their marketing experiences with their competitors. John H. Patterson of the National Cash Register Company, says in this respect: "Our competitors will find out what we are doing quickly enough, so we might as well tell them ourselves. Then, at least, we will know what they know. The more we can encourage competitors to use constructive methods, the less they will have for cutting prices and using destructive methods."

The same philosophy is held by Studebaker's president, Paul G. Hoffman, who invited competitive dealers to a special demonstration of Champion cars. Said Mr. Hoffman: "The more our competitors know about the good points of our car, the less they will depend upon hearsay and use their imagination." Mr. Hoffman won the respect of his competitors.

An automobile manufacturer who was considering doing some advertising called in a newspaper representative and a direct mail printer for consultation. The newspaper man advised him to use newspaper advertisements exclusively and not to waste his money by sending out circulars. The printer's advice was to spend all of his money on direct mail and advertising because "people just don't buy automobiles from newspaper advertisements." As a result the manufacturer decided to save his money and do no advertising. If the two salesmen would have admitted that both mediums had their points both might have received a nice contract.

Competition is essential to the American system of private enterprise. "Without competition business would soon get out of line with national purchasing power, and the state would have to take business over to make it function effectively as a service to society.

It is sometimes said that competition is bad because it is fundamentally destructive. That is a favorite argument of those who want to see the profit system emasculated. But these idealists forget that people are lazy. We all seek the line of least resistance. . . . The best of us need a kick in the pants every now and then. It keeps us from getting too soft and flabby. We need someone to keep us on our toes and to prevent our going stale on the job. That is where a fast-stepping competitor helps us. He keeps us stepping just a wee bit faster. He makes us put forth that extra effort which wins. Should we hate a man who helps us win?

"Modern business has no place for little-minded fellows. It demands men who can see beyond their nose."

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EDITOR'S NOTE: *In the foregoing editorial which appeared in the United Roofer, there's much that meets the eye of pertinent application to our industry. In line with their editor who trenchantly states modern business demands men who can see beyond their nose, we should like to add the thought that they should also remember their rights end where the other fellow's nose begins. From which you will gather, of course, that we see no point in the kind of competition which from a practical standpoint helps to lessen confidence in the industry and merely serves to upset your fellow P.C.O.'s "apple cart." Unwarranted termite control guarantees; competitive prices designed to get the customer's signature on the dotted line though the service subsequently rendered is a case of love's labor lost, are part of what we have in mind. As we have indicated on other occasions and as has been stressed in the N.P.C.A. Membership Service Letters, the N.P.C.A. annual conventions, the four sectional conferences and the local pest control meetings are the proper places where you can meet with your friendly competitors and thereby encourage the type of competition so necessary to business health. Many P.C.O.'s, we are glad to say, are already availing themselves of the opportunities presented. More should.*

## Army Camps Present Business Opportunity

A RECENT squib in Cyanogas News, published by American Cyanamid and Chemical Co., N. Y., advises that the War Department is now committed to the use of private services for pest control in Army Camps. All such work is under the supervision of local camp commanders. Pest control operators located in the vicinity of Army Camps should become acquainted and keep in touch with the Medical Officer as well as the Quartermaster Officer. You may find this an important source of new business, particularly in the matter of rat control. Recent membership service letters of the National Pest Control Association have likewise emphasized these sentiments, giving perhaps more detailed information.

## Data On Prints and Labels, Under New Law Which Must Be Registered At Copyright Office

About a year and a half ago, by virtue of Public Act No 244, Congress changed the old print and label act, but the new provisions did not go into effect until July 1, 1940.

Because the change affects copyright registration of advertisements and labels, Printers' Ink issue of February 7th, 1941, has published an article giving necessary details on the question. Due to pressure of other must editorial material, we are unable to publish reprint of this article in our current issue. However, in the meantime if you should like more particulars, please get in touch with us. The material should prove of interest to P.C.O.'s, Supply Houses and others.

## Correction

On Page 18 of the February issue in the article entitled "Poisons and Their Application in the Control of Rats and Mice," by F. E. Garlough, the following correction should be made:

The No. 2 treatment for antidote to strychnine should read as follows: "As soon as vomiting ceases, or immediately, give sodium amytal tablets (1½ gr.) with a cup of water to retard or reduce severity of convulsions. Give one to an infant, two to a small child and three to five to an adult."

In connection with the antidote treatment for cyanide it should read as follows: "Amyl nitrate is on the market in ampuls incased in cloth covering. To use, leave in cloth, break the glass ampul, and hold near the nose for 15 to 30 seconds every 3 minutes, rather than continuously. Use only 1 ampul until the physician attends patient."

# Public Relations

## *Business Requisite—Proper Public Relations*

*By* EDWIN W. CRAIG

EDITOR'S NOTE: *The material hereinbelow is a reprint from Real Estate. It is the first of a series on the subject of PUBLIC RELATIONS. You are urged to read editorial on page four of this issue. It will serve as an explanatory guide of the program contemplated. Reprints of these articles will be available to P.C.O.'s at a nominal cost for your use in sales promotion.*

THE term "Public Relations" apparently means many things to many people. To some it is merely another name for publicity. Others think of it as propaganda devised for the purpose of misleading an unsuspecting public. Still others think of it as the interpretation of statements favorable to business. Personally, I think of it as none of these things. In my opinion, public relations is merely the art of getting along with people.

To properly examine the subject of public relations, it is necessary that we definitely define another term—"The Public." Those people with whom we come in contact, or who hear about us, or whose opinions or actions in any way effect us—these make up our public. Upon what this public thinks about us depends the success or failure of our business enterprise.

Putting the two definitions together, we find this description of the job of Public Relations, as expressed by Arthur W. Page, vice-president of American Telephone and Telegraph: "The task which business has, and which it has always had, of fitting itself to the pattern of public desires, has lately come to be called 'Public Relations.'."

One of the smartest jobs of courting the public favor has been and is being done by General Motors. Henry Weaver, head of their consumer research, describes Public Relations in this way:

"Public Relations means finding out what people like and doing more of it, and finding out what they don't like and doing less of it."

And from another General Motors executive, Paul Garrett, their Public Relations director, comes this:

"Public Relations is not something that can be applied to a particular phase of a business—nor is it a sort of umbrella covering everything, but touching nothing. It is rather a fundamental attitude of mind, a philosophy of management, which deliberately and with enlightened selfishness places the broad interest of the buying public first in every decision affecting the operation of the business."

May I refer to our own company in giving you some of my thoughts in this matter of "Public Relations"?

In our company we have in the field 4,000 agents, superintendents and managers. These men are having countless contacts with the public every day. It is a matter of paramount concern to us that every one of these contacts is of the character that generates good will. We emphasize to our men that above all else they are human contacts, and therefore subject to all the human reactions and emotions; that every one of them is an exposure in which the company's public good will is exposed. We teach them that in every public contact a small fragment of our good will is actually at risk.

If the contact is satisfactory in service and in courtesy, it builds a small fragment of good will which, added to other satisfactory contacts, not only maintains but promotes greater good will. On the other hand, if a contact fails in service, in courtesy or in satisfactory explanation, a fragment of good will has been lost, ill will has resulted, and Public Relations have been impaired.

We believe that every contact between any representative of our company and the public—be it prospect or any one else—is a Public Relations contact, and should be so conducted as to become a new vehicle for public good will.

May it not well be that every transaction in your office, well handled, with courtesy and fairness and promptness and consideration for the interests of the customer, will bring other customers to your office in search of your service? When you are known in your town as the fellow most capable and most willing to give sound advice, who gives prompt and thorough and sympathetic service in all matters, large or small; if they think of you when they think of your business—then you are getting somewhere in your relations with the public.

The influence of every one of your employees on public relations can be good or bad. If they are not made conscious of this fact, the most liked executive in the world cannot offset the damage they could do.

Here is a case in point. A fellow I know in Nashville was on the lookout for a house. He had been living in an apartment, and decided to lease a house. He and his wife found one they thought might be just the place. There was a "For Sale" sign up in front with the name of a real estate agency.

This fellow was not interested in buying, but he called the agency to inquire if the house could be leased. He was unable to get much satisfaction on the telephone, because the operator couldn't decide whether, under the circumstances, she should connect him with the rental or sales department, so he went to the office in person. The sales manager was out, and although he wanted to inquire about leasing and not buying, they advised him he would have to talk to the sales manager. He left a call, but heard nothing from it, and went back a second time.

He finally cornered the sales manager, and he told me afterward that the sales manager's indifference made him feel just a little guilty in inquiring about leasing a house that was listed for sale. They told him they preferred to sell the place, and if they didn't, they would call him. They didn't call, and after a lapse of several days, he called them.

Other conferences followed, and finally he lost patience entirely and signed a year's lease for another apartment at a higher rental than the house required, because, he told me, he just didn't want to have any more dealings with a real estate agency.

He said that he never had a more definite impression of begging somebody to take his money in his life. Never at any time, he said, was an effort made to interest him in another house, or to convey the idea in any way that they wanted to do business

with him. He told me that no effort was made to sell him the idea that under a monthly payment loan plan, that could be secured for him, the house could be purchased, for practically the same monthly payment that would be required as rent.

Now, of course, I don't know whether this incident is interesting to you, or whether it applies to your business in any way, but let me tell you what this fellow said to me. He floored me with this one. Said he: "This same real estate agency I was trying to deal with also makes real estate loans. If the same unfortunate experience had occurred very often, wouldn't it affect your loan business, and the business of other lending institutions?"

Please do not consider me critical in the observation that here was a tragic public relations performance. In that agency, would it not have been better for all departments to be able to talk to a prospective customer, be he a lessee, a purchaser, an owner, or just a plain tenant. Do not leases lead to sales, and do not sales lead to mortgage loans and hazard insurance, and therefore should not every individual in every department be conscious of the job of developing business through each and every department?

### Details Are Important

This matter of Public Relations in Business is such a broad one that no detail is too small to be measured in its light. In fact, so far as your business and mine are concerned, I think we might change the wording of the title slightly and make it read, "Public Relations Is Business."

Some of the detail which we have found to be important in our business may not be important in yours, but then there may be some common interest.

Lately we have given much thought to the use of the telephone in our business. We insist that every telephone call be handled by some one of affable and courteous voice, and some one whose pleasantness of manner radiates good will. In addition to courtesy, we insist that every telephone call renders to the caller just as prompt and efficient service as if the call were made in person. Sour telephone usage violates the fundamentals of good service. It is to be denounced as public relations stupidity.

We are seeking to simplify and to humanize our annual reports or financial statements to the public, and our premium notices to the policyholder. We have even started a study toward simplifying the wording of the policies themselves, and if you know what a sacred cow this has been in our business, you will appreciate just how far we are actually going in this matter of public understanding, which, by the way, is absolutely essential to favorable public relations.

Occasionally there will arise controversy, and while it is not always possible to make the concession or the decision demanded, still by the exercise of a greater degree of skill, patience, and explanation it is possible to turn a probable loss into a possible gain.

No matter how misguided a complainant may be, he is entitled to a hearing. The man with a grievance wants an opportunity to air it. Very often he wants that more than he wants actual satisfaction of his demands. May we not remember that the man who is favorable to us is passive about it, but a single disgruntled customer or other individual spreads his opinions widely, and influences other persons to think as he thinks.

I do not know, of course, to what extent it is applicable in your business, but in our business it is absolutely necessary for a branch office manager to give his personal attention to every caller who has any kind of complaint. In connection with our instructions on the subject, we cited the operating plan of the president of one of America's largest and most successful corporations. He permits no one in his entire organization to handle a complaint. He handles them all himself.

. . . I think we can just summarize by saying that getting along with people in business is just the application of good, sound common sense principles and methods.

## Scorpion Horde Invades Rio de Janeiro Suburbs

Rio de Janeiro, Brazil.—Saude Hill, a suburb of Rio de Janeiro, became a No Man's Land recently, under attack by waves of extremely poisonous, oversized scorpions, whose bite causes a paralysis.

Two children who were bitten are reported to have died.

The waves of the pest had increased in size this morning and scorpions were also invading the village of Andarahy. Residents fled their homes and sent an SOS to public health officials. Armed with insecticide guns, public health agents began a "Blitzkrieg," and late in the day were said to have the situation well in hand.

—*New York Times.*

## Pittsburgh Passes Ordinance On Sodium Fluoride

Pittsburgh, Pennsylvania, where there occurred the unfortunate fatalities due to improperly labeled container of Sodium Fluoride, enacted a local ordinance that would not only include fluorides, but any poisonous substance as an exterminator or insecticide. The ordinance reads as follows:

AN ORDINANCE to control the use, sale and distribution of exterminators and insecticides, and providing penalties for the violation thereof.

SECTION 1. Be it ordained and enacted by the City of Pittsburgh, in Council assembled, and it is hereby ordained and enacted by the authority of the same, that no person, persons, firm, partnership or corporation, shall sell or give away or distribute in the City of Pittsburgh, any poisonous substance as an exterminator or insecticide unless the container bears a label legibly and conspicuously printed with the word "POISON" and the symbol of the skull and crossbones in red ink, followed with the words "CAUTION"—This exterminator or insecticide contains (insert name of poison), a deadly poison, together with the antidote therefore and the name and address of the manufacturer or packer, and the words "POISON," "CAUTION," and "ANTIDOTE," should appear in block type of a larger size than the other wording, viz:

POISON
(Symbol of Skull and Crossbones in Red Ink)
This exterminator or insecticide contains (insert name of poison), a deadly poison.
Antidote: State briefly.
Manufactured or packed by:
Name.....
Address.....

SECTION 2. The term "exterminator" or "insecticide" as used herein shall mean and include any substance, not a fumigant, under whatever name known, used for the destruction or control of insects, vermin, rodents or other pests.

SECTION 3. No person, persons, firm, partnership or corporation, shall sell, offer for sale, or give away, any fluoride to be used as an exterminator or insecticide, unless said fluoride is distinctly colored Nile blue.

SECTION 4. Any person, persons, firm, partnership or corporation violating any of the provisions of this ordinance shall, upon conviction thereof, be sentenced to pay a fine of not more than Twenty-five Dollars ($25.00), or in case of non-payment of such fine to undergo imprisonment in the Allegheny County Jail for a period not exceeding ten (10) days.

SECTION 5. This ordinance shall take effect immediately upon final passage and publication according to law.

## Treed Rats Bite Fireman

Medford, N. J.—Large rats, driven into trees as the overflowing Rancocas Creek flooded near-by buildings, attacked fireman Samuel Lewellen when he, too, sought refuge in a tree. Lewellen was treated for bites.

# Our Research Bottleneck

By GEORGE R. ELLIOTT, *Worcester, Mass., and*
WILLIAM O. BUETTNER, *Brooklyn, N. Y.*

"GIVE us the tools, supplies, equipment. . ." This familiar plea of nations at war may well be borrowed by the structural or household pest control industry. It conveys the main idea. And encouraging indeed is the mounting evidence of the industry's interest in the program for intensified research as officially endorsed by the National Pest Control Association.

The problem confronting us is basic, far-reaching, acute. Insect and other animal pests are more than a compound nuisance; they continue to destroy millions, probably billions, in property; to constitute a major health hazard by directly and indirectly causing sickness and death. Still they defy the skill of man.

We are a young industry to have made even the progress we have. Very few of our firms go back fifty years, relatively few even twenty-five years; the great majority have been in business less than ten years. Perhaps we owe no apologies. With commendable patience the more competent P.C.O.'s have explored, by trial and error method, techniques, equipment and chemicals. They have absorbed a full share of rebuffs. Research has not kept pace with practical demands. Hit-or-miss experimenting, makeshift equipment and innocent confidence in the claims of manufacturers have necessarily been substituted. The service industry has meekly "taken the rap" for failures more properly chargeable to ignorance, optimism or misrepresentation of others. Too often, for example, Federal Trade Commission "cease and desist" orders belatedly reveal technical information which should have been ours in advance. We recognize that improvement has been made in more recent information from many of the better manufacturers, but notwithstanding, there is place for more improvement.

Not only is our industry young, the units are small. Too small to conduct the scientific research essential to proper performance of their service to the public. Some excellent study has been done by firms of the manufacturing or supply industry, resulting in clarification and in definite improvement of standards, to the benefit of the P.C.O. in his every day operations. Obviously, however, there is need for independent or disinterested research. The normal source of this has been certain Federal bureaus, Agricultural Experiment Stations and other State research organizations, and Universities. The Federal agencies most directly concerned are the Bureau of Entomology and Plant Quarantine, Fish and Wildlife Service (formerly Biological Survey) and the U. S. Public Health Service.

It is natural that all should more or less automatically turn to the Federal agencies for leadership. The typical individual citizen does. "It says so in the government booklet" is final, almost scriptural, authority. Such confidence is refreshing to behold. But the really important issue is: is the confidence merited?

In a fast-moving age and industry, technical information must keep step if it is to remain authoritative or reliable. The cold fact is that, in the fields most important to structural and household pest control, Federal appropriations have dwindled so as to bring research almost to a standstill. Studies not in the strictly agricultural field have been drastically neglected. And this during the very years when industry developments have made research especially urgent. Much existing government literature is based on studies made ten or twenty years ago. This is deplorable in itself; yet these shortcomings are multiplied and perpetuated by the practice of quoting, compiling and reprinting from these ancient and unrevised "government sources." Examination of current pest control publications shows that the above formula is the rule rather than the exception. Offenders (possibly unwitting) include other government departments, such as those responsible for military or defense phases, many authors or compilers of State sponsored publications, consumer organizations and syndicated material for newspapers or magazines.

Very basic, therefore, is the need of protecting the spring whose waters so many seek, thirsty for knowledge which is reliable, fresh and justly authoritative.

This is the purpose behind our association's dual effort to (a) provide machinery for renewed and continued research, (b) to stimulate a pest control literature based on today's knowledge and conditions, not those of an outstripped past.

Due to practical consideration, including that of the Congressional calender, specific attention has been devoted to restoring adequate appropriation to the Bureau of Entomology and Plant Quarantine, for the express purpose of providing personnel and equipment for research in structural pests. A hearing was granted by the Agricultural Sub-committee on Appropriations on February 3, 1941, in Washington, to representatives of the pest control industry. The Congressional Committee is composed of Congressmen Clarence Cannon, chairman, Missouri, and Congressmen Malcolm C. Tarver, Ga.; W. P. Lambertson, Kansas; Charles H. Leavey, Wash.; David D. Terry, Ark; Everett M. Dirksen, Ill.; Ross A. Collins, Miss.; Charles A. Plumley, Vt. Our case was very simply and factually presented and there appeared interest on behalf of the members of the Congressional Committee, Congressmen Cannon, Tarver, Leavey and Dirksen asking questions during the hearing.

The industry committee consisted of P. Calvert Cissel, Washington, D. C.; F. Kenneth Harder, Hempstead, N. Y.; Gilbert M. Stover, Baltimore, Md.; and William O. Buettner, Brooklyn, N. Y. The proceedings are outlined below.

To supplement the appreciative hearing of February 3, 1941, relative to much needed research of common household and structural insects, pests and vermin—such as moths, carpet beetles, termites, psocids, ants, silver-fish, bedbugs, roaches, various stored products' beetles and weevils, we offer the following factual information:

1—The National Pest Control Association is a non-profit membership organization with no paid officers, but all officers and directors and men serving on committees give of their time, energies, education and money in the hope that there will be brought about a better understanding in the technique of service operations and thus the public receive the benefit of satisfactory exterminating control services in the field of household and structural insects and pests.

(a)—Membership is 408 from practically every state in the country (39

and District of Columbia as well as Hawaii—a few states have little or no pest control service problems).

(b)—It is estimated that there are 1400 firms throughout the country, but about 850 of these are estimated to be what we term one-bag operators; that is, the individual being the owner-operator (employer) and employee. Other firms are small with an average of 3 or 4 employees.

(c)—The membership of the National Pest Control Association, and others for whom we are authorized to speak, it is estimated, does approximately 65% of the household pest control service work of the United States.

(d)—The association considers itself the "clearing house" for the household and structural pests' industry which is evidenced by the support given it by firms (members and nonmembers) as well as leading educational institutions that open their doors for regional conferences in an effort to assist the industry. (Purdue University, Louisiana State University, Massachuetts State College and University of California provide the annual regional conferences and invitations are extended to all pest control operators.)

2—In seeking more research, our efforts are encouraged by:

(a)—70 individual letters written by individual firms coming from 19 states (among which are over ten from Missouri and New York and others scattered from California to Massachusetts and from Wisconsin to Louisiana).

(b)—At the convention held last October in Indianapolis, Ind., 177 signed a petition, photostatic copy of which is made a part of the record.

(c)—115 firms have sent petitions which in turn represent more than 235 firms in that competitors have procured interest among themselves and included names on the 115 petitions. A total of over 600 names are on these petitions and have been filed.

(d)—There are local groups or organizations and by telegram or letter there has come specific request that the National Pest Control Association do all it can to have more research work done on common insects of the home and other structures. Among these associations, copies of telegrams and letters attached, are:

St. Louis Pest Control Association, New Orleans Pest Control Operators, Michigan Fumigators & Exterminators Assoc., New York Pest Control Association, Cincinnati Pest Control Operators, Connecticut Pest Control Operators Assoc., Greater Pittsburgh Pest Control Association, New England Pest Control Association.

These telegrams have been filed with the Clerk of the Committee.

(e)—The outstanding trade paper, "Pests and Their Control," speaks for 1,000 of its readers. See telegram that is made a part of our file left with the Clerk of the Committee.

(f)—At the recent Purdue Pest Control Operators' Conference with a registration of 93 from 16 states, mainly from the midwest, there was complete endorsement of the program for more research. Similarly at the Eastern Conference, 101 from 12 states along the Atlantic seaboard, there was endorsement. At the Southern Conference with men from nine states, there was approval. Petition has been filed. The Pacific Coast Conference to be held February 20-22 will undoubtedly give similar expression.

(g)—It is interesting to observe that with notice received from Washington, D. C., on January 28th, of the hearing scheduled for January 31st, (later postponed to February 3rd)


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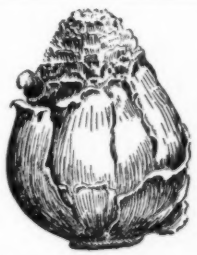

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and after a letter was sent to the members of the Board of Directors, immediately 26 replies were received. We particularly request that these telegrams be made a part of the record itself and these have been filed with the Clerk of the Committee.

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Our requests are not great but we need help; this is best stated in one of the telegrams which reads: "We have run out of excuses to our customers as to why aid is not rendered in this field." Please bear in mind that we are small units, few firms having more than three employees and yet we are asked to serve a public that is confronted with such consequences as the following:

**1—Property Damage:** Just to mention a few

| | |
|---|---|
| Clothes Moths | $ 20,800,000 |
| Termites | 40,000,000 |
| Post Beetles | 35,000,000 |
| Stored Products' Insects | 300,000,000 |

No mention of other insects, but it is very plain to see that damage runs into the millions, if not into the billions.

2—**Health Hazards:** There is plenty of literature that speaks of the part insects and pests play in causing sickness and death that is available.

3—**Nuisance:** Who wants to sleep with bedbugs; see roaches and ants run over food; flies contaminate food, etc?

Our service industry, as stated in some of the telegrams, has not control over the factors today that make for spreading of insects and more information is needed to aid the public, as well as to better equip the pest control operator to render intelligent and satisfactory services.

For the present fiscal year ending June 30, 1941, there is something like $2,182,532.00, appropriated to the Bureau of Entomology and Plant Quarantine for research of which less than $100,000, directly or indirectly, is for the field of household or structural pests. Only $14,500 is for the department known as "Insects Affecting Man and Animals." The Bureau of Entomology and Plant Quarantine is the only source from which the public might obtain literature and impartial information. What are these bulletins and advice giving? Mainly material that is 10 to 20 years old, or if reprints or revisions have been issued, very little has been added over the span of 20 years which shows results of new research. Indeed, some of the statements contained are antiquated so that the industry is handicapped as it even tries to put into effect suggested materials that manufacturers and supply houses claim have value. This is further made embarrassing as the Federal Trade Commission issues stipulations and "cease and desist" orders regarding the claims being made by the manufacturers. The Bureau of Entomology and Plant Quarantine rightfully takes the position that it should only issue information on factual evidence of its own research findings and yet today research is practically at a standstill and the public suffers as well as our industry which is trying to do an honest service job.

We commend for careful reading several of the letters made a part of the record as well as the telegrams that show conclusively the sentiments that prevail. Let us quote a few of these statements from letters and telegrams:

(a)—People are urging us to find some improved methods of pest control because of tremendous property damage as well as health hazards.

(b)—We are a service industry and being small units or firms cannot be expected to do our own research. Public recognizes this and leans heavily on advice from Bureau of Entomology and yet for most part comparatively little research is being done in our household and structural insects' and pests' field.

(c)—Bureau of Entomology and Plant Quarantine for fiscal year ending June 30th, 1941, has a research appropriation of $2,182,532.00 and yet less than $100,000.00 is for research in our household and structural pest field, which, among a few of the outstanding estimated damage figures includes: Clothes Moths, $20,800,000; Post Beetles, $36,000,000; Termites, $40,000,000; Miscellaneous Stored Products' Insects, $300,000,000, etc.

(d)—Part of a program that means conservation of lumber, clothing, food, health, and even labor.

(e)—Public will be protected from quack remedies and fraudulent operators.

(f)—We have an obligation to the public and therefore the public must have better information and we in turn better equipped to provide satisfactory services.

(g)—Economic benefits accrue to the nation as a whole.

(h)—Research has been so inadequate that tremendous losses have been incurred by the public.

(i)—Wars have been lost by epidemics.

(j)—In particular I feel that we have an enormous field for work in seeking to develop fumigants which have a high toxicity to insects while being relatively harmless to man. The present field of fumigating is restricted by the dangerous nature of these gasses.

(k)—Impartial research essential—far more work is needed to bring us up to date, because of changes in transportation and travel; air conditioning, etc.

(l)—While we feel that we all—those of us engaged in this business of controlling pests—render valuable services to our clientele at this time—the best we know how to render, as a matter of fact—most of us appreciate our limitations and would welcome, and use to good advantage, such additional information and findings as would be available through the government's continued research and investigation in this field.

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To summarize, in the interests of the public at large in that impartial research of household and structural insects and pests may be undertaken by the Bureau of Entomology, we ask that an appropriation of $20,000 to $25,000 be provided to make possible the employment of at least three men, provide necessary equipment and thus correlate findings, including field observations, that will make possible satisfactory measures for the elimination and control of the destructive property damaging insects and pests and aid in protection of health as well as to cope properly with these obnoxious and abhorrent insects, pests, and vermin.

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### Telegrams

We submit a few of the telegrams received as indicative of sentiments expressed:

**LOS ANGELES, CALIF.**—Value of Research in Control of Pests and Disease in Agriculture Horticulture and Animal Husbandry has long been recognized. The same problems as they effect the home have been sadly neglected. I feel certain that when their equal importance is shown, this discrimination will cease.

L. R. Alderman.

* * *

**CLEVELAND, OHIO**—When in Washington, please do your utmost to present the crying need of enlarged research work on household pests. We have run out of excuses to our customers as to why more aid is not rendered in this field.

Albert M. Akers.

* * *

**CHICAGO, ILL.**—Information available to the public on how to control household insects contained in goverment pamphlets is ten to twenty years old. Changes in living habits by way of homes and furnishings make for more losses to the public from insects through increased damage caused by moths in buildings and by wood eating insects in the structural part of homes. The public looks to research entomologists for control measures in keeping with the increase in insect damageable property. I urge that funds be made available to the research entomologists to develop new methods of control for household insects. This would decrease our national loss in damaged properties by way of the public having available better control measures.

Walter S. McCloud.

* * *

**WALTHAM, MASS.**—To supplement our letter of December 18 we respectfully urge that you impress upon the Subcommittee of the Department of Agricul-

ture immediate need of Bureau of Entomology and Plant Quarantine for immediate additional funds for research in the field of household pests. We in the field of pest control are to a large degree operating under terrific handicap and must of necessity turn to government for answers to many of our problems which they in turn are unable to answer, because of lack of funds to proceed with laboratory and field research. Advise presenting our recent letter to the committee as one basic reason for urging expediency.

B. W. Eldredge, Waltham Chemical Co.

* * *

**NEW YORK CITY, N. Y.**—Strongly urge government intensify and extend research on household insects and pests. The public does not realize extent of damage increasingly being done by insect infestations. Increased governmental aid to pest control industry is essential in public interest for reduction and elimination of needless losses due to destruction by these public enemies.

New York Pest Control Association.
W. J. Parker, Secretary.

* * *

**KANSAS CITY, MISSOURI**—The need for adequate research of household pests has been only too manifest in recent years. Its lack has been a detriment in that it vitally effects public from health and economic point of view. As Editor of Pests Magazine, I know our readers numbering over 1,000 monthly heartily endorse the worthy program for more research work on household pests by Bureau of Entomology and Plant Quarantine as sponsored by N.P.C.A.

Al Cossetta.

* * *

**WORCESTER, MASS.**—Insect pest problems in connection with defense program already appearing and certain to increase. Bureau of Entomology and Plant Quarantine notably qualified scientifically to promote conservation of health and food supply. Provision now for adequate research facilities seems obvious economy and common prudence.

Ransford Insecticide Co.
(George Elliott.)

* * *

**PALO ALTO, CALIF.**—Shall we leave research to big business or shall government conduct it for equal benefit of all?

Robert E. Hackley.

* * *

**BOSTON, MASS.**—Research by the Bureau of Entomology and the Fish and Wildlife Service is needed urgently right now. Adequate funds must be made available for the Bureaus to thoroughly study insects and rodents which affect man or food products. Sorry cannot be with you.

Charles W. Houghton,
Regional Vice-President, N.P.C.A.

* * *

**ATLANTA, GA., ST. LOUIS, MO., NEW ORLEANS, LA.,** and **SAN ANTONIO, TEXAS**—Urgently request Committee on Appropriations seriously consider adequate funds necessary for more research on household insects and termites for pest control industry as a whole. I have this week discussed with members attending Southern P.C.O. Conference representing nine states. Unanimously agreed request be placed immediately before proper authorities for action.

Thomas C. Raley.

* * *

**BEAVER FALLS, PA.**—Members of Greater Pittsburgh Pest Control Association want a larger appropriation in order that Bureau of Entomology and Plant Quarantine do more research work on household pests, especially carpet beetles, termites, rats, etc. Please voice the sentiment for us at hearing before Appropriations Committee. We feel that the past appropriations have been inadequate to conduct this work.

Greater Pittsburgh Pest Control Ass'n.
Louis Gatto, Secretary.

* * *

**BOSTON, MASS.**—Please convey to Committee on Appropriations that an increase in research budget of Bureau of Entomology and Fish and Wildlife Service is of utmost importance. Adequate research has not been available for a number of years. Our industry requests this assistance.

New England Pest Control Ass'n.
Mark Weintraub, Secretary.

* * *

**COLUMBUS, OHIO**—Cannot attend hearing, previous committment of Ohio Entomological Society Meeting. Imperative immediate research be carried on for control pests attacking fabrics. Also common household pests that will present a problem in army camps. I speak from personal experience. Suggest some cooperative arrangement with universities because wider geographic spread.

H. K. Steckel.

* * *

**NEW ORLEANS, LA.**—Research for control of household insects very necessary to aid pest control operators to do good work for home owners. Several hundred million dollars lost in homes each year, not to mention diseases carried by rats, flies, roaches, ants, etc. Represent fourteen members New Orleans Pest Control Ass'n.

Ernest R. Barber, President,
Barber Laboratories, Inc.

* * *

**CINCINNATI, OHIO**—With the many new problems daily confronting us, research work is badly needed to protect food products and lives against the ravages of insects. All in Cincinnati are 100% in favor. Glad for the hearing. Good luck.

Bill Phippard.

* * *

**CORPUS CHRISTI, TEXAS**—Research by the government regarding household pests is absolutely necessary and speedy. Action by you and fellow members is highly appreciated.

John W. Anderson.

* * *

**ST. PAUL, MINNESOTA**—Further research work necessary, especially on brown dog ticks.

Max J. Levy.

* * *

**BEAVER FALLS, PENN.**—The Louis Gatto Company of Beaver Falls, Pa., engaged in pest control feels the necessity of a larger appropriation for the Bureau of Entomology and Plant Quarantine to conduct research work in household pests; namely, termites, rats, moths, carpet beetles, etc. Please place our sentiment before hearing at Appropriations Committee meeting.

Louis Gatto and Employees.

* * *

**DETROIT, MICH.**—There is now definite proof that disease is spread by household pests and as the cities are becoming more congested, it is necessary that the pest control industry have all the scientific information possible to combat them, especially in view of the fact that there is a national emergency and bound to be a larger influx to the congested areas. It is a fact that disease has caused more fatalities in past wars than gun powder and if we are preparing to protect our citizens there is no better way than to control household pests which is one of the carriers of disease.

Michigan Fumigators & Exterminators Ass'n.
Ray Bechtel, President.

* * *

**ATLANTA, GEORGIA**—(and speaking for over 50 offices throughout the South)—The greatest enemy of the human race is insect pests. They work contin-

(Continued on Page 27)


# J-O PASTE

To the vermin exterminator who is desirous of extending an outstanding service to his client J-O PHOSPHOROUS PASTE *is* the solution

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**Empire State Bldg.** **New York**

# FUMIGANTS

By J. L. HORSFALL, *American Cyanamid & Chemical Corp., New York, N. Y.*

EDITOR'S NOTE: *This paper was presented by Dr. George H. Chapman before the Eastern Pest Control Operator's Conference, Amherst, Mass.*

FUMIGATION is the process of liberating a toxic gas in an enclosed space and confining it in this space for a specified period of time. It is customarily used to kill pests such as insects and rodents. The use of fumigation is based on the fact that both insects and rodents breathe and that during the fumigation period some of the toxic gas is taken into the body and certain vital physiological process or processes are checked or even stopped. The pest is thus killed. Every living organism must breathe; even stages of the insect, such as the eggs and pupae, perform this function. Because these stages are not physically active they do not breathe as rapidly as do the active stages. For that reason, when all stages are present, it is sometimes necessary to use higher concentrations, longer exposures, or both, in order to obtain complete kills when much less strenuous treatment would give effective results on the active stages. Since the process of fumigation presupposes that the gas can be confined in a given space, the tightness of the enclosure will have a direct bearing on the initial concentration which must be used, the concentration which is maintained and the exposure period. This factor of tightness may vary from the condition obtaining in vacuum chambers where there is no leakage, for all practical purposes, to that in a canvas tent over a citrus tree where leakage is very rapid.

The Pest Control Operator may use contact insecticides or stomach poisons in his work. What are the conditions which indicate that a fumigant might better be used than a contact insecticide or stomach poison? In considering this point, it must be remembered that the fumigant reaches the pest by its own force since it is a vapor or gas. Therefore, it is not necessary to reach the location of each and every insect by manual operation as is the case in the use of other types of insecticides. A fumigant is particularly adaptable under conditions where the locations of the pest or their habits would indicate that the use of a fumigant would be more positive, more feasible, or more economical. Several specific instances can be cited. There are several sprays which are effective killers of bedbugs and their eggs if the given spray is brought into actual contact with the insects. However, some of the insects and eggs may be located in cracks between baseboard and floor or even between inside and outside walls where contact is out of the question. Fumigation is more suitable in such a situation. Another instance —a ship comes into harbor, infested with rats. Since the ship previously called at a port where cases of plague existed it is suspected that the rats may be infested with infective fleas. Rats may be killed with poison baits, but this remedy will not kill the fleas. Moreover, the baiting method would tie up the ship for a long time before it could be certain that all rats were killed. Fumigation is again the most effective, certain, and rapid method of handling the case. Again—certain quantities of food products, tobacco or other commodities may be found to be infested with insects, or it is suspected that insect eggs are present in the mass of material. Contact sprays would be of value only in killing forms of life on the outside of the mass of goods. In order to penetrate the materials and, at the same time, leave them in satisfactory condition after treatment, a fumigant or gas should be used. This fumigation may be carried out in a warehouse, atmospheric chamber or vacuum chamber.

The fumigants commonly used on a commercial basis are adapted for use in certain fields and with certain commodities. In some cases several fumigants may be adaptable and the commercial operator may select the one he thinks the most effective or the most economical. It will be noted that all five fumigants used in the table are used under various circumstances in atmospheric chambers, while three are often used in vacuum chambers. There is also given a table of average dosages and exposure periods based upon information taken from literature of the manufacturers. Certain special conditions may require higher dosages.

It was stated earlier that insects and other pests are killed during a fumigation by exposing them to a given concentration of gas for a certain period of time. Under most conditions in industrial fumigation it is not possible to hold the concentration of gas for any appreciable period of time; leakage occurs to a greater or lesser degree and the contents and walls of the area under fumigation remove gas from the atmosphere by absorption and adsorption. In order to compensate for these factors it is necessary to introduce more gas than would be required to kill the pest in the same period of time in an empty space where no leakage occurred. In order to illustrate what takes place in a building which is under fumigation, it is possible to construct a picture, known as a concentration curve,

## COMMONLY USED FUMIGANTS

| | HCN | Chloropicrin | Methyl Bromide | Carboxide | Ethylene Dichloride-Carbon Tetrachloride |
|---|---|---|---|---|---|
| Detached Dwellings | x | x | | x | |
| Warehouses | x | x | x (tight) | | |
| Flour Mills | x | x (Spot) | x (tight) | | x (Spot) |
| Theatres | x | | | | |
| Atmospheric Chambers | x | x | x | x | x |
| Vacuum Chambers | x | | x | x | |
| Ships | x | | | | |
| Closets and Chests in Homes | | | | | x |

of the gas concentration in the building. This is done by drawing samples of the gas-air mixture from the space under fumigation in the building at given intervals, and making a chemical analysis to determine the amount of the particular gas in each of the samples.

The first illustration represents a house fumigation for bedbug control with HCN. It is taken from a recent technical paper by Medical Officers and U. S. Army Engineers stationed at Fort Peck, Montana, in which they described 502 such fumigations during a period of three and a half years.[1] The dwellings and dormitories housed the workers engaged in construction work and were of very loose construction. Outside walls were of siding and sheathing and inner walls and ceilings were finished with wall board. They used a dosage of one pound of sodium cyanide per 1000 cubic feet of space and exposures usually were for 20 hours. It may be noted that complete kills of all stages of the bedbug were obtained in these fumigations. The curve which is selected is typical of the concentrations obtained under such conditions. The curve illustrates several points. It will be noted that the maximum concentration, 6.5 ozs. per 1000 cubic feet, was reached in a very short period of time. It was a very high percentage of the theoretical 8 ozs. of HCN per 1000 cubic feet which was expected. Immediately it starts to drop, illustrating the decrease due to the leakage and the amount taken up by furnishings and wall. At the end of 5 hours it has declined to 1.21 ozs. per 1000 cubic feet and at the time the building was opened for airing at the end of 20 hours it was .12 ounces per 1000 cubic feet. After airing for 7.5 hours the concentration had dropped to .002 ounces or 3 parts per million. The men in charge of these fumigations usually followed the practice of closing the building after aeration, heat-

(1) O'Donnell, Mundt, Knudsen, and Delano, Jour. Ind. Hygiene & Toxicology, 22, 253.

**MANUFACTURERS' DOSAGE RECOMMENDATIONS***
**FOR**
**SOME COMMON FUMIGANTS**

| FUMIGANT | DWELLINGS | | WAREHOUSES, ETC. | | ATMOSPHERIC CHAMBERS | |
|---|---|---|---|---|---|---|
| | Dosage | Exposure | Dosage | Exposure | Dosage | Exposure |
| Hydrocyanic Acid | 8-16-oz. | 12 hrs. | 16-20-oz. | 24-72 hrs. | 24 oz. | 24-72 hrs. |
| Methyl Bromide | | | 16 oz. | 12-24 hrs. | 16-24 oz. | 12-24 hrs. |
| Carboxide | 12 lbs. | 12 hrs. | 15 lbs. | 16 hrs. | 20 lbs. | 16 hrs. |
| Ethylene Dichloride-Carbon Tetrachloride | 18 lbs. | 24 hrs. | | | 14 lbs. | 24 hrs. |
| Chloropicrin | 10-16 oz. | 24 hrs. | 1-2 lbs. | 24 hrs. | 16 oz. | 24 hrs. |

*Average dosages. Special conditions or commodities may require higher dosages.
Temperature requirements 70° F. or above.
Dosages for 1000 cubic feet of space.


FLUOREX POWDER
white or blue

SODIUM FLUORIDE

FLUORIDE-PYRETHRUM
Fluo-Pyre

PYRETHRUM POWDER

PYRETHRUM CONCENTRATE
1-20

DERRIS-ROTENONE

RUMETAN ZINC PHOSPHIDE

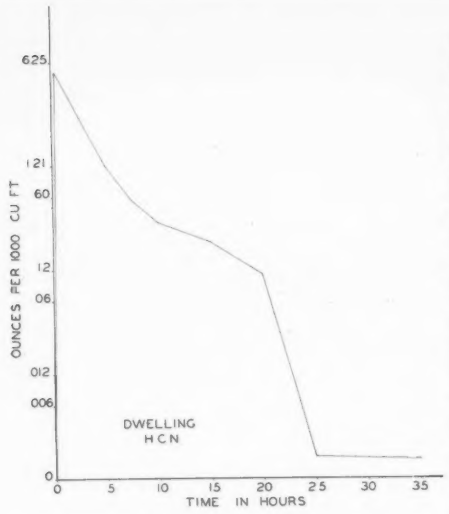
—BBK—

Quality Goods at the right price.

**American Fluoride Corporation**

151 West 19th St. New York, N. Y.

MAGIKIL
ANT BAIT JELLY
Easy TO USE
KILLS ANTS
IN HANDY TUBES AND TRAPS
SIZES to fit YOUR NEEDS
1 oz. Garden Tubes
3 oz. Estate Tubes
8 oz. Jumbo Tubes
5 lb. Cans
30 lb. Pails
Safety Traps for household use
SIMPLE! QUICK!
Developed by one of the leading American Universities.
Used with satisfactory results by many Pest Control Operators. Prices are low.
Write now for details and prices.
Lethelin Products Company, Inc.
MOUNT VERNON NEW YORK



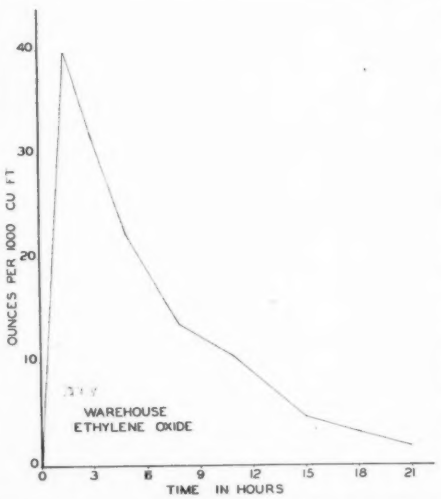

ing, and again airing in order to drive off all gas from walls, mattresses, etc.

Two questions may be asked in connection with the consideration of these figures. Why is it possible to obtain the kill when the concentration normally falls at a fairly rapid rate? If the concentration reaches a point which is below that of a killing concentration for bedbugs, could not the building be opened much sooner without changing the results which were obtained? The answers to these two questions are so related that they may be answered together. Experimental work by Busvine[2] under laboratory conditions in tight chambers has shown that a complete kill of bedbugs and eggs can be obtained with a dosage of HCN of .17 ounces per 1000 cubic feet with 5 hours exposure. Under condition where leakage is taking place and the concentration is not constant, the amount of gas to which the insect will be subjected becomes the average or mean of the concentration over a period of time. So long as that average is sufficient to furnish a lethal concentration, a kill will be obtained. Therefore it is sometimes necessary to prolong the exposure beyond the point where the concentration has dropped below the lethal point if this drop occurs before the time when the product of the concentration and exposure period have satisfied the lethal constant. Another factor is that just as an insect takes gas into its body during a fumigation, so it loses it when the building is opened for airing, and the gas concentration in the air outside its body becomes less than that which is inside its body. On the other hand, when the gas concentration outside of the insect's body is some figure other than zero, even though this may be low, the gas is not given off from the insect's body so rapidly. Often insects are in bedding, clothing, cracks, or other locations where gas has been taken up by the surroundings. By the same principle as that just outlined, the gas surrounding it is higher for a time than the air in the open space and it is really subjected to a given concentration for a longer time. These are factors which are extremely difficult to measure under laboratory or controlled conditions. However, it is possible to demonstrate them in the laboratory and this has been done. They are not theoretical. It is true that probably the major number of fumigations for bedbugs are conducted with much shorter period of exposure than the 20-hour period used in the example just cited. However, it may be pointed out that whenever practicable the longer exposure period will insure more positive results.

(2) Busvine, Ann. Applied Biol., 25, 607.

In order to illustrate a concentration curve with a gas other than HCN, a fumigation in a warehouse with a mixture of ethylene oxide and carbon dioxide has been selected. The mixture differs slightly from Carboxide in the proportion of the two gases used. This warehouse, in England, contained bags of cacao beans and the figures were published in a study of warehouse fumigations by Page and Lubatti.[3] The figures represent the ounces of actual ethylene oxide found in the samples. The original dosage of the gas mixture per 1000 cubic feet used was equivalent to 56 ounces of ethylene oxide per 1000 cubic feet. In this case it will be seen that the peak concentration of 39.5 ounces per 1000 cubic feet was reached in 1½ hours. Thereupon the concentration declined to 22.1 ounces in 5 hours and reached a figure of 1.3 ounces at the close of the fumigation, which was 22 hours.

(3) Page & Lubatti, Jour. Soc. Chem. Ind., Oct. 6, 1933.




If the concentration curves of these two gases used in the fumigation of a house and in a warehouse are compared, it will be noted that they present a very similar appearance. They are both characterized by the peak initial concentration and by a similarity of slope as they decline. Both of the curves have reached a point which is far below the lethal concentration at the close of the fumigation, approximately 20 hours, but in each case it must be remembered that the average of the entire area encompassed by each curve is concerned in the actual killing of the insects. It may also be noted that the two curves differ in that the peak concentration for HCN is reached in a very much shorter period of time than is the case with Carboxide. In a much tighter building than the warehouse under consideration, a peak concentration for Carboxide would undoubtedly be reached in a much shorter period of time.

An essential part of fumigation procedure consists in clearing the premises of the gas at the close of the fumigation. This operation involves more than simply liberating the gas which is present in the air in the building and replacing it with fresh air. Anyone who is familiar with fumigation practice is well aware of the fact, as above stated, that the walls and furnishings or other materials in the space which has been fumigated, have taken up some of the gas. It is essential that this gas should be eliminated to such an extent that when the building is again occupied, there will not be sufficient gas remaining to affect the inhabitants. Various authorities have published statements with reference to the periods of time to which a human being may be exposed to different concentrations of HCN. There seems to be agreement among several of these authorities that a concentration of 50 to 60 parts per million (.06 - .07 oz. per cubic foot) can be tolerated for one hour and 20 to 25 parts per million (.024) - .030 oz. per cubic foot) without serious effects for several hours. However it must be noted that this latter figure refers to adults and undoubtedly would not hold true for infants. After an examination of all the published data, it would seem logical to conclude that a concentration of 5 to 10 parts per million, if still remaining in a building, would not be harmful, particularly if the occupants during the first night left windows open in all bedrooms for ventilation.

It is very obvious that temperature plays a very important part in

the aeration of a building. It may be of interest to examine some data on this point which are taken from the publication dealing with the fumigation at Fort Peck, Montana, which were previously mentioned. Before discussing these, it should be noted that the Health Officers in charge of this work did not release buildings for occupancy until the concentration of HCN had been reduced to 5 or less parts per million when the inside temperature was at least 80°F. Two sets of data have been selected in order to illustrate two extreme conditions with reference to the effect which temperature has on the ease of airing the buildings:—

FUMIGATIONS AT FORT PECK, MONT.

| | No. of Buildings Requiring Indicated Days to Clear | | | | | | | | | Average Ventila. Period |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 1937 | | | | | | | | | | |
| January | .... | .... | 3 | .... | 1 | .... | 4 | 1 | 2 | 6.2 |
| August | 20 | 6 | .... | .... | .... | .... | .... | .... | .... | 1.2 |

January: Minimum inside temperature 70°; mean outside temperature —8.3°; outside humidity 100-82%.

August: Minimum inside temperature 62°; mean outside temperature 72.2°; outside humidity 61-21%.

It will be noted that out of the 11 fumigations conducted in January, only 3 were released in a period as short as 3 days, and 2 of these buildings were not released until after a 9-day airing period. The mean outside temperature during this month was —8.3°F.

As a contrast, data on fumigations in August may be noted when 22 out of 28 buildings were released upon airing for one day, and the remaining 6 after 2 days airing. It will be noted that the mean temperature for this month was 72.2° F. The procedure used in all the fumigations was to apply heat during the aeration period. "Climatological conditions have no effect if the buildings are properly heated to maintain effective dissipation of the gas." More than 50% of the 502 buildings were released for occupancy in one day using a safe maximum limit of 5 parts per million.

After a building has been fumigated with HCN and thoroughly aired, it would be desirable if the Pest Control Operator made a practice of using some test which would assure him that the residual gas had been reduced, at least, to a safe minimum. Several years ago a manufacturer of safety devices placed on the market an HCN detector which was supposed to be useful for this purpose. The principle of operation consisted in drawing a given amount of air through a glass tube which contained an indicator carried by an absorbent. Theoretically this indicator was supposed to change to a blue color for a given length of the tube, depending upon the amount of gas in the air. However, the experience of our own men, as well as that of some of the Pest Control Operators has shown that these indicator tubes deteriorated rapidly and despite the fact that the manufacturer recently issued the tubes with a date limit, they are still unreliable as far as positive action is concerned. For that reason we do not think that this device should be relied upon by the Pest Control Operator as a test method.

Another simple method of testing is the use of methyl orange-mercuric chloride test papers. These papers should be in a moist condition if they are to be relied upon for use in a test. They are very sensitive, but it is possible to use them in a satisfactory manner if the residual gas has dropped to a concentration which is actually safe. As an illustration of the behavior of these papers we may

(Continued on page 29)


APEX

FUMIGATORS' SEALING TAPE

★

*Designed Especially to Meet the Needs of Fumigators*

A fine fabric strong enough not to break when pulled off the roll.

Firm enough to lay smoothly down a window crack making a perfect seal without snarling.

Finest and longest lived adhesion ever seen, so bonded to the tape that when removed the gum goes with the tape leaving the surface clean.

A perfect tear-off makes scissors unnecessary.

Fumigators! Is it true that sealing is where you lose time and money? Do you want to take the guess work or uncertainty out of sealing? . . . Then send us remittance for your sample order for 60-yard rolls of 1-inch at 70 cents per roll and you will realize that your sealing troubles are over.

★

APEX TAPE DIVISION

Sanbornville, N. H.

Allied Members National Pest Control Ass'n

*Prepared to Kill?*

Are you prepared for the 1941 season? Remember that **Prentiss Pyrethrum Products** with high **Pyrethrins** content are your best guarantee of dependable **Killing Power.**

Prove to yourselves that **Prentiss Pyrethrum Products** can be relied upon for **High Killing Power at a Minimum Cost.** Write for samples and prices on—

- **CLARIFIED PYRETHRUM No. 20**
- **HIGH TEST PYRETHRUM FLOWERS**
- **ACTIVATED DUST**
- **POWDERED RED SQUILL**
- **BED BUG CONCENTRATE**
- **POWDERED DERRIS ROOT**

R. J. PRENTISS & Co., Inc.

100 GOLD STREET NEW YORK

# Fundamentals of Advertising

By PROFESSOR J. H. McKEE, *Purdue University, Lafayette, Ind.*

EDITOR'S NOTE: *We wish it were possible to put into the printing of this address the inimicable style of Professor J. H. McKee as he delivered his address at the Fifth Annual Pest Control Operators' Conference held at Purdue University, January 9th 1941. A different approach to the subject of advertising after which three pages of corrected English in advertisements were submitted in connection with Professor McKee's remarks and are a part of the outline of the conference course.*

WHEN Professor Davis asked me to talk to you gentlemen I said I would. My acceptance was more or less under false pretenses. He had supposed that I knew something about advertising. I did not disabuse him. In fact I was pleased to be asked. I like to talk. But the fact remains that I don't know much about advertising.

In the library at the Pharmacy building on the campus is a book with the title, **Poisoning the Public.** It is a good title. The book is about poisons. And about some abuses. But it is chiefly scientific. Nearby is James Rorty's book, **Our Master's Voice.** Our "master" is advertising. It is a very lively book, very much worth reading. Mr. Rorty makes a great attack on the abuses of advertising. It is a good antidote, say, to the Bruce Barton sort of sentimental (and rather effective) advertising of advertising. Mr. Rorty seems to feel that advertising is a parasitic, nonfunctional growth on our social and economic system. He can make a very good case. Philosophically, advertising, at least large scale display advertising, can be looked on as the desperate effort of a technical age to make people buy what they do not have the money to buy.

Nearby stands another book, **The Fight for Truth in Advertising,** by H. J. Kenner, an account of advertising as an integral part of our culture and of attempts to reform it, to make it at least not grossly misrepresentational. The writer ventures as illustration of amusing truth in advertising, the story of a women's clothing firm in Worcester, England, who advertised:

Hats: Some of these are terribly simple, others are simply terrible.

Fifty hats: All odd colors — and that isn't all that's odd about them.

The pharmacy-medical segment of our civilization, incidently, is especially interested in advertising because with the very earliest coming of popular print to both Europe and America in the 17th and 18th centuries medical and pharmaceutical advertising was **very prominent** (and often very bad), all of which is easy to understand—people **are** sick and they don't like it and they are eager to read of ways out. (Our poor dilapidated world is **still** interested. The number of doctors and hospitals in our radio serials today is huge—more doctors and hospitals and operations, perhaps, than love affairs and divorces.) But the fact that truth in medical and pharmaceutical advertising is making some progress is indicated by the fact that the worst advertising is now found only in the worst publications.

To supplement the unhappy interpretation of James Rorty and not wholly to contradict it, is a remark that may be meaningful by a gentleman whose name I do not know. I am sorry he must remain anonymous, for maybe he speaks sense. "The primary purpose of advertising is not to sell goods." (It sounds as though he were trying to be epigrammatic.) "It is to expedite work that could conceivably be done 'by hand.'" That seems to be where experts in any field come in, including Pest Control people. Just about the best appeal you have to public patronage is that your skill and equipment, your professional knowledge, mean that a job can be better done by you than by the layman "by hand." One might add that our technical age makes production easy. Things in quantities unbelieveable before the days of machinery are now possible, easily. And advertising is one great means of getting these things to people's attention. If the New Deal can only succeed in getting everybody the wherewithal to do the buying, then, maybe (I do not pretend to be an economist) advertising which is informative and even emotionally stimulating may become not merely a means of competition for the dollars of a few but a visualizer of possibilities for the many.

Some years ago Professor Aitkenhead at the University had an engineer son who was working for the Soviet. He lent me copies of a Soviet newspaper published for English speaking people in the U.S.S.R. The paper was, of course, not exactly censored. It did not need to be. It was government published and said only what was nice, what the government wanted to say. Since there was no business in Russia and no competition, the paper had almost no advertisements in it. It did mention a few hotels. That was about all. At first impression, it was pleasant not to have to leaf over page after page dodging advertisements.

And I do dodge advertisements in American papers. When the lady who polls west Lafayetteians on what we have read in this, that, or the other magazine comes around, I feel a perverse pride in telling her that I see practically none of the advertisements.

When our college newspaper fills two-thirds of its space with ads, the campus clientele objects, cries out.

The advertiser, then, seems to be meeting a fairly general objection on the part of the people to advertising.

And yet we read that good old William Allen White, of Emporia, Kansas, who, though he does run a newspaper and collects money for advertisements therein, is, apparently, rather wise, and honest, says. "Advertising has been and is a great weapon in our democracy." I suspect he is right. Having to leaf over pages of department store ads may be small price to pay for papers which — though their sins are not light — are at least better than a Soviet propaganda paper. In other words, with all the abuses in advertising, it is an almost necessary means of information in a capitalistic society, and so long as we have that, we can only hope that common sense, judgment, and a bit of skepticism on the part of readers and judgments, good taste, and ethics on the part of advertisers will keep most of the good in and most of the bad out of advertising.

When I saw Professor Davis' published subject "Fundamentals of Advertising," I was reminded of the story of the talking gentleman who said that if he knew everything about a subject he could talk half an hour on it; if he knew something about a subject he could talk an hour; if he knew nothing at all about it he could talk indefinitely. You see, we

all know something about the fundamentals of advertising. We know, for instance, that advertising appeals to various human emotions: pride, instinct for wealth, health, position, prestige, information; the emotions of hunger, of sex.

Now let us add another list to the rather self-evident list just mentioned. What are some of the methods, devices, that the advertiser or advertising copy-writer uses to do this appealing to pride, fear, sentiment, escape, sex?

George Burton Hotchkiss has a list ready-made for us. A little changed in phrasing, it is, in part, something like this: Give the reason why; present a picture; use some sense appeal, exhortation, dialogue, personification; tell a story; make an assertion; be editorial, use historical, scriptural, material.

But we can be much more specific about devices for applying these materials. A bit of red ink on part of the type in a black context; for emphasis a very large, very red tomato, which means soup; indication of motion through skillful drawing; a bathing beach scene (I am now merely saying what psychologists in a dozen books point out) to appeal to the sense for health and play; emphasis by heavy (or not so heavy but artistic) border—never the old typographical border of the nineteenth century; analogy—the ballet girl on the one toe to indicate "balance" in a certain fountain pen; focusing attention by a well placed cut or by artfully chosen and arranged type; a minimum of type and maximum of white space; the coupon device; the use of "authority" — user testimonial, doctors, scientists.

Some of these things are a bit suspicious. Analogy, for instance — of the ballet girl and "balance." Her good looks and the festivity which the ballet implies are good in themselves—but—the balance? Does it not worry you? And the doctor, whose too dignified presence or too white coat may be used to indicate a use that may be non-therapeutic or even actively harmful.

One can become really enthusiastic about much advertising, especially the pictorial. Some good artists have done beautiful as well as striking work for advertising — in all European countries as well as in our own — beautiful and also amusing, and humor is just as useful as beauty. Not infrequently the two are found together. And not all the advertising genius is graphic. Here is a piece of mere type—good looking type—which just as well as a picture of a beach and a beach ball and a surfboard makes the reader want a vacation. GO TO SLEEP TWICE, AND— IT'S SUMMER!

If you like waiting, you can wait three months for summer. And **then** it'll be a soppy little lawn . . . and a crocus . . . and flu.

But if you'll trust yourself to an express liner, you can see summer come shouting up over the third-day horizon right now—with palm trees in its hair!

It isn't real, of course, this candy-pink opera set they call a beach in Burmuda—bright jade waves breaking on miles of coral — dull olive cedars puffed against a picture-post-card sky — water so clean it spoils you for all other bathing—yachts like angel butterflies in a breeze that can be depended on.

Sometimes when one does not become enthusiastic, he is impressed with the dignity of some advertising. Here, for instance, is language from the advertising (it might, perhaps,

(Continued on page 29)


**NEW LOW PRICES**
**on Penick**
**POWDERED PYRETHRUM**

**Favorable market conditions have enabled us to offer new low prices for this high-test pesticide. Smart buyers are now placing contracts for 1941 delivery. Write today for quotations—**

**Pyrethrum extract (PYREFUME) prices are down too!**

**RED SQUILL**

**Kills rats effectively. Physiologically standardized and tested for uniform toxicity.**

**PENICK'S Powdered TIMBO and DERRIS ROOTS**

**—for improved roach and insect powders.**

*Send for Descriptive Booklets*

**S. B. PENICK & COMPANY**
132 NASSAU STREET NEW YORK, N. Y.

***Keep Your Customers Satisfied***
**use**
**CENTROBULB BELLOWS**
**because**

they distribute powder with a maximum of efficiency, not only making for powder economy but that clean kind of a job your customers will appreciate as well.

**Three sizes:**
**Service; 8 oz.; 4 oz.**

1. Heaviest metal nozzle with deep cut thread.
2. Largest opening for easy filling.
3. Stay tight screen to avoid clogging.

*Write for our surprisingly low prices.*

**CENTRAL RUBBER PROD. CO., Inc.**
821 BROADWAY NEW YORK, N. Y.

# Biological Deterioration Factors and Their Influence on Buildings

*By* W. E. McCAULEY, *State Natural History Survey Division, Urbana, Ill.*

EDITOR'S NOTE: *The following paper was delivered by Mr. McCauley at the Fifth Annual Pest Control Operators' Conference, Purdue University, Lafayette, Ind., January 8, 1941.*

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HOW many of you have given serious thought to the reason for the growth of your particular industry with reference to structural problems? Did it ever occur to you that there was already in existence very strong architectural organizations with extensive and well trained memberships? That you have come into the structural pest field because of oversight, on the part of owners, architects, or builders (I'm not pinning the blame on any one group) of certain important factors of deterioration which operate in buildings. Such oversight has been the cause for frequent warnings within the ranks of those responsible but the negligence seems to continue and here you are a "corrective industry." It is interesting to me to analyze for myself how different individuals among you happen to be in this particular profession. Not many are here because of any special training in engineering, architecture, or other phases of building. I appreciate that there are several exceptions to this. Most of you, however, have arrived here by way of interest in the causative factors rather than thru interest in the buildings themselves. That, of course, is the route which has brought me here.

Since this is admittedly a corrective industry it might be well to examine the possibilities for the continuation of the problems which you correct. With the exception of increasing use of wood substitutes there is little immediate prospect of the elimination of the problems in which we are interested. A little later on we will examine in some detail economic factors which are actually tending to increase these problems.

All of the foregoing statements have been leading me to the question concerning the way in which your industry is accepting the challenge of handling structural problems. To appreciate this question we must realize that: (1) Your problems are primarily outgrowths of structural weaknesses, which permit the entrance and/or operation of definite biological factors of deterioration. (2) It is within the realm of possibility that the responsible building agencies will wake up and recognize the existing conditions and set up the necessary building standards for the prevention of a large portion of the present problems.

It is my feeling that in dealing with structural problems you as an industry should utilize to a greater extent certain professional tools of the building profession. I have reference to blueprints, engineers drawings, structural terminology, and lettering. Certainly more use should be made of existing methods in reporting work necessary in initial planning of jobs. Many of you are doing this at the present time—those of you who are familiar with the work being done on the west coast know that it is common practice there. My suggestion then is simply "be more professional" in your handling of structural problems.

The second portion of my remarks has to do with the biological factors themselves. Is your industry giving adequate attention to **all** factors concerned? To me this is the most important point we can consider. What are the biological factors? All of you know termites to be important and are quite familiar with their mode of attack and recognized principles of their elimination. Powder post beetles are also quite familiar to you as are carpenter ants and other wood-destroying insects of occasional importance. But how many of you think of fungi as of significance? How many among you are as competent to deal with fungi as with the insect destroyers of wood? Perhaps I am pessimistic but my observations have led me to believe that many of you are either unfamiliar with decay in wood or have hesitated to deal with it. In my opinion you should place decay causing fungi on an equal basis with termites and give equal attention to both in correctional treatment of buildings. Because of my opinion I am going to attempt to give you pertinent information concerning decay in wood and its causative fungi. I confess that I have drawn heavily upon Hubert, Hartley, Hunt, Greeley and others for this information. For your further convenience I have included titles of some publications dealing with this subject, with this paper, together with their source.

"Decay in wood is a breaking down of the wood structure due to the action of living organisms, plants of a low order which are called fungi. These plants feed upon the wood structure and thereby receive their nourishment for continued growth. As a result of this attack, the wood is left in a very much altered condition, color changes are evident and the wood becomes soft, spongy, stringy or crumbly, depending upon the particular fungus infecting it," writes Hubert, one of our authorities on fungus control. The term "dry rot" is commonly used to designate any decaying wood especially if the decay is in the late stage or perhaps completely dead due to the lack of further food supply in the wood. This term is very misleading since no decay develops in wood unless there is considerable moisture present in the wood. Common decay in wood is characterized by a brownish discoloration, a crumbly appearance and the formation of cube like pieces of rot due to shrinkage cracks which result when moisture is lost. The causative organisms are tiny plants called fungi which have no green coloring matter and therefore cannot manufacture their own food, but instead feed upon the cell walls or the cell contents of the wood upon which they grow. Such feeding process results in the decomposition of the wood, and, in this case, continues until the wood becomes crumbly or broken up into irregular or cube-like fragments. The life history of such fungus is significant in that spores invisible to the naked eye, act as seeds and aid in the dissemination of the fungus from infected to sound timber. Given desirable conditions the spore germinates and tiny threads, root like, begin to branch out thru and into the wood by dissolving their way thru the cell walls. After the plant has developed for some time a fruiting body comparable to seed producing organs on higher plants is formed on the exterior of the infected wood. Such a fruiting body may release thousands of spores which are readily trans-

mitted thru the air to potential points of growth. The fungus may spread also from contact of infected wood with sound wood. In most cases fungi grow only in wood of moisture content, above 20%, but two notable exceptions exist in the cases of **Merulius lachrymans** and **Paria incrassata,** two fungi that are specially adapted for conducting moisture from moist situations up to wood thru large fungous threads much as termites are capable of reaching wood out of contact with the soil. Such water conducting strands may be 20 or 30 feet in length.

The important physical factors influencing decay are: (1) food supply, (2) temperature, (3) oxygen, (4) chemical nature of wood, (5) moisture. Of these only the latter two are within the realm of practical regulation. It will be noted that there is a very close similarity between these and the factors influencing termite activity. Moisture being the key to the control of both fungi, termites and certain anobiid beetles.

Since it is readily conceivable that termites can be eliminated without stopping decay special consideration should be given to the elimination of both these biological agencies of deterioration. Briefly, the prevention and control of decay in buildings hinges upon the following practices:

(1) Use of uninfected lumber—removal of infected lumber and adjacent timber likely to be infected.

(2) Use only well-seasoned wood—prevent the gross absorption of moisture on the job before use.

(3) Prevent wood being used in contact with soil or moist surfaces of masonry unless thoroughly treated with a recognized preservative—disinfect the areas of infection before replacing with sound timber.

(4) Avoid the use of wood imbedded in stone, concrete, brick or other masonry without adequate ventilation.

(5) Provide cross ventilation sufficient to prevent moisture content in all wood exceeding the critical 20% point.

(6) Prevent moisture accumulations from leaks, condensations, overflows, or from other miscellaneous causes.

(7) Structures containing wood should be regularly inspected for evidence of decay and upon the detection of its presence it should be removed and the conditions favorable for its growth corrected.

Since time is not available we can not go into detail but it is very evident that structural alteration will enter into the proper handling of decay even more so than into control of termites. Let us turn now from physical causes of building deterioration to economic or aesthetic causes which continue to bring about the problems of biological deterioration. These have been included in your outline.

(1) Buildings lower to the ground—framing timbers closer to termites—more likely to take up moisture beyond the critical 20%.

(2) An increasing proportion of lumber used is sap wood with a proportionate decrease in natural resistance to the various factors of depreciation.

(3) Moisture barriers within walls are more common—prevent drying out.

(4) Air conditioning coupled with wall insulation has led to condensation problems with ob-


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vious influence on moisture contents of framing timbers.

(5) Another moisture barrier in increasing use in buildings is the cemented linoleum and similar waterproof floor coverings—decay is given more opportunity as the result of their use.

(6) Speculative building with all sorts of weakness which transgress all around building practices.

(7) Hollow unit masonry walls—more access for termites.

(8) Increased use of unit masonry veneer with first course usually below grade line.

(9) The advent of earth filled terraces, porches, patios with the inevitable point of junction open to termites and often with the framing timbers in actual contact with the soil—a termite haven or heaven with decay a sure bet.

(10) The shortening of eaves until they are usually flush with the wall increases somewhat soil moisture adjacent to foundation walls.

(11) Centralized heating systems probably aid in drying out wood in prevention of decay, but certainly provide termites with year around tropical climate.

(12) Continued lack of knowledge and interest by the laymen and educators as well. To me it is surprising that as I visit high schools having trouble with termites (often to the tune of a new gymnasium floor), seldom does the biology teacher or his class appear on the scene.

(13) Continued carelessness in use of concrete with insufficient attention to the following: (1) Preparation of concrete mixes. (2) Cleaning of trash from forms, or (3) Proper keying where concrete meets other masonry.

The effect of these factors is quite obvious, and without their further discussion I would like to call your attention to needed research. The answers to some of the questions probably lie with the members of your industry but will remain hidden so long as they are not assembled or otherwise brought to light. You should certainly have these items in mind as you follow your daily work in this field of corrective work.

1. What constitutes adequate ventilation in relation to:
   (a) Soil moisture?
   (b) Clearance?
   (c) Spacing and arrangement of openings?
   (d) Prevailing wind conditions?
2. Further knowledge of relationship between decay organisms and termites.
3. Effect of chemicals in concrete upon adjacent wood from standpoint of decay.
4. How to ascertain fungous infection as a basis of rejecting new lumber.
5. Further studies upon the use of chemicals for in-place treatment of wooden members for fungous and termite control.
6. Further study on the relationship of termite infestations to walls of basements, heated and otherwise.
7. Study on incidence of infestation, methods of spread, and apparent increase of termites.
8. Relationship of certain powder post beetles to moisture content of wood.
9. Determination of natural causes which result in building abandonment by subterranean termites.
10. Determination of reason for absences of termites in many apparently susceptible areas both in tropical and temperate climates.

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9. Lumber Literature, National Lumber Manufacturers Ass'n., 1337 Connecticut Avenue, Washington, D. C.
10. Wood Structural Design Data, National Lumber Manufacturers Ass'n. Price $1.00.
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12. Concrete Facts for Concrete Contractors.
13. Permanent Farm Repairs.
14. Concrete Improvements Around the Home.
15. Permanent Farm Construction.
16. Concrete Floors for Residences.
17. Repairing Leaky Basement Walls in Residences.
18. Building Watertight Masonry Walls.
19. Concrete Floors over Unexcavated Portions of a House.
20. Recommended Practice for Building Waterproof Basements with Concrete.
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22. Cinders as Concrete Aggregate.
23. Quality Concrete.
24. Plans for Concrete Farm Buildings.
25. Concrete for Industrial Buildings and Garages.
26. Concrete in Schools.
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30. List of Publications on Wood Preservation.
31. List of Publications on Mechanical Properties and Structural Uses of Wood and Wood Products.
32. List of Publications Relating to Fungus Defects in Forest Products, including Decay in Trees.
33. Partial List of Government Publications of Interest to Architects, Builders, Engineers and Retail Lumbermen (also P.C.O.'s). (References, 30 through 33, available at Forest Products Laboratory, Madison, Wisconsin.)



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## Florida Bees Busiest

Tallahassee, Fla.—The Florida bees produce three times as much honey as is gathered in any other state, according to statistics compiled here.

—*New York World Telegram.*

## Disinfectants, CS70-41 and CS71-41 Effective Date

Under date of Nov. 5th, 1940, recommended revisions of Coal Tar Disinfectant (Emulsifying Type), Commercial Standard CS70-38, and Cresylic Disinfectants, Commercial Standard CS71-38, were circulated to those concerned for written acceptance in accordance with the action of the Standing Committee, U. S. Dept. of Commerce, National Bureau of Standards, Division of Trade Standards, Washington, D. C. Since that time the Department has received signed acceptances from a number of manufacturers, distributors and users, estimated to represent a satisfactory majority. It announces, therefore, in the absence of active opposition that the commercial standards which are indentified as Phenolic Disinfectant (Emulsifying Type) CS70-41, and Phenolic Disinfectant (Soluble Type) CS71-41, may be considered effective for new production from February 1, 1941. As soon as printed copies become available each acceptor of record will receive one. Printed copies will be mailed to non-acceptors only on specific request.

## Court Decision on Public Health

*Furnishing of respirators to employees engaged in certain work.*—(St. Louis, Mo., Court of Appeals; *Blittschau* v. *American Car & Foundry Co.*, 114 S.W.2d 196; decided November 8, 1940.) A Missouri statute required that "in all processes of manufacture or labor referred to in this section which are productive of noxious or poisonous dusts, adequate and approved respirators shall be furnished and maintained by the employer in good condition and without cost to the employees." As this section had been expressly construed by the Supreme Court of Missouri it mandatorily required that adequate and approved respirators be furnished and maintained by an employer and, in so providing, left no room for discretion on the part of an employer in the manner of complying with the statute. In an action where recovery of damages for an occupational disease was sought and where one of the plaintiff's grounds of negligence was the defendant company's failure to have furnished him with an adequate and approved respirator as required by the statute, the court of appeals held that, inasmuch as the statute was imperative in its requirements and made no exception to its application in cases, such as the instant one, where there was evidence that the work or process carried on was productive of noxious or poisonous dusts, it was no part of the plaintiff's duty to offer evidence that respirators were practicable, feasible, or possible, or that the employer had the same at hand, or could have procured them at reasonable expense. Instead, it was said, the plaintiff's burden was limited merely to the introduction of evidence that the employer had violated the statute, resulting in the injury of which he complained.

—*Public Health Reports, Vol. 56, Jan. 3, 1941, No. 1*

## Rodents Are Enemy On Maginot Line Now

Kaiserlautern, Germany.—The war still is on with all grimness on the Maginot line, the Strassburger Neuste Nachrichten reports, adding, however, that it is waged against rats and mice.

Approximately three million rodents already have been shoveled from the long battle line and carted away. But many more are still to be caught.

Evacuated villages and farms in front and behind the Maginot line in Lorraine and the Palatinate have been virtually overrun by vermin. About six million squill cakes were laid out as bait besides a large quantity of fish poisoned with 1,500 quarts of a liquid gained from squills. Eight hundred pounds of poisoned barley were applied against rampant mice.

## Locusts Make Good Eating!

Roy Chapman Andrews, director of Manhattan's American Museum of Natural History in his latest book, *This Amazing Planet* (Putnam) makes the startling statement that in North China he ate locusts cooked in sugar, found them "good, crisp and sweet."

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# Termites and Their Control

By NEELY TURNER, *Connecticut Agricultural Experiment Station, New Haven, Conn.*

TERMITES are small insects classified in the Order Isoptera. Structurally they resemble certain stoneflies and roaches. The most primitive termite existing today has a wing structure similar to roaches and deposits its eggs in a mass similar to the egg capsule of roaches. Moreover, one roach (*Cryptocerus punctulatus* Scudder) eats wood and harbors intestinal protozoa similar to those found in termites. The fossil termites discovered to date indicate that the forms living today are just about as primitive as those living in the past. Some of these fossils have been found in rocks at least 50,000,000 years old.

Sixty-three species of fossil termites have been described. The species of living termites now number more than 1900, of which 56 species of eight genera and three families occur in the United States. Two species have been introduced but occur in very small numbers and are at present of no economic importance.

The only genus represented in the northeastern states is *Reticulitermes*. *R. flavipes* Kollar is common to all the states. *R. hageni* Banks and *R. virginicus* Banks occur as far north as southern New Jersey. *R. lucifugus* Rossi, the Mediterranean subterranean termite, has been found only near Forest Hills, Mass. All of these species are subterranean or ground-nesting types. The wood-nesting type includes the dry-wood and damp-wood termites. Since these are not present north of North Carolina they will not be discussed here.

The four species of *Reticulitermes* listed above are very similar in habits. *R. flavipes* is probably the most important from the standpoint of numbers and destructiveness. All of the information in this lecture is derived from this species, which is called the eastern subterranean termite. I know of no reason why the facts given will not apply to the other species in this area.

### Economic Importance

The eastern subterranean termite has been of some economic importance since early in the development of economic entomology. In 1876 the floor of a building in Cambridge, Mass., was so weakened that it had to be supported by posts and jackscrews. A wooden bridge used for loading cattle on railway cars collapsed as a result of termite damage, also in Cambridge in the same year. The basement of the State House in Boston was found infested in 1883. Joutel reported many infested buildings in New York City, especially in Harlem, in 1893. He said, "Observations as to injury extend over a period of many years. One house sagged badly and was raised and underpinned with stone." In 1898 a swarm of termites disrupted Sunday School in a Baltimore church. Investigation showed that the floor had given way in many places, and extensive reconstruction was necessary. A house in Albany was found infested in 1899.

Now of course very few buildings are represented in these early records, and yet they indicate that serious damage by termites is not a recent event. Our records of insect damage in Connecticut as judged from specimens sent in for identification are remarkably complete. They started in 1900, and show that until 1925 termites appeared about once in 10 years. From 1925 to 1930 reports averaged one a year. This increase took place without any sort of publicity from any source. Since that time reports of infested buildings increased rapidly, reaching a peak in 1936. A sharp decrease occurred in 1937 and is continuing to date. Does this mean that termites are of declining economic importance in this section of the country? Not necessarily, although that is one logical possibility. Such observations as have been made, and these are very few, indicate that individual colonies of termites appear to be just as active and just as destructive as they were 10 years ago. New buildings in new areas are found to be infested, so the decline must be one of lack of interest rather than in actual abundance of termites.

Estimates of damage in terms of dollars are extremely difficult to obtain. If the estimated cost of repairs and protection against future termite attacks is the criterion, one very large figure would result. If the money actually spent is the estimate a very much smaller figure would result. Dr. Snyder's estimate of $40,000,000 damage is based on a depreciation percentage, which really means that the amount depends on the useful life of the building. Which of these methods is correct is a controversial matter having no particular importance to this group.

Perhaps a better approach from your standpoint would be an estimate of damage to individual buildings. In actual cases this amounts to practically no damage to a large majority, and varies to such serious damage to few that repairs are as expensive as construction of a new building of the same size. Naturally these latter are structures which have been attacked for many years.

There is no doubt whatever that termites have been and will continue to be serious economic pests. Their damage may vary greatly, since southern New England is on the northern border of the distribution map of termites. Personally, I expect another "wave" of termite cases about 1950, when the thousands of unprotected buildings now being constructed have existed long enough for signs of infestation to become unmistakable.

One further point deserves discussion. The "termite outbreak" of 1930-36 was undoubtedly the natural result of construction of highly susceptible buildings in the years 1917-1929. It was made sensational by publicity of all sorts—from public officials, entomologists and pest control companies. The "outbreak" is subsiding, not because termites are less abundant but because their damage no longer has great publicity value.

### Life History

This phase of the termite problem has long been scorned by practical termite control operators. Almost without exception the control of any insect pest is based on carefully-gathered facts of life history and habits. Termites are no exception to this rule. Much philosophy concerning termite habits has been written; frankly, such works have no importance in termite control. Today I am going to give only the essential facts.

Let us start with the swarming adults from a colony located in woodland. These are the adult males and females from the colony. They are about a quarter of an inch long, dark

brown in color, and with four gauzy wings that are longer than the body. Their flight is more of an aimless fluttering rather than the swift powerful flight of a bee or housefly. They fly a short distance, shed their wings, pair off, and seek a place in damp soil near a food supply of dead wood to start a new colony. Hundreds of them are eaten by birds and by ants and other predatory insects. If the survivors find a suitable place, they mate and the female deposits from 6 to 12 eggs. This usually occurs about six weeks after swarming. The eggs hatch in about two weeks, and the nymphs are fed and cared for by the male and female. These nymphs mature in about a year, and are usually workers with perhaps one or two soldiers. All are stunted and much smaller than normal. At this point the workers take over the task of feeding the queen and king and of caring for the young. The queen becomes a sort of egg-laying machine. Colony development is very slow—at the end of five years only 5,000 termites are present under normal conditions and these can develop in about one-half cubic foot of wood. The queen remains mobile throughout life, although her abdomen is somewhat enlarged. At some time during colony development there appear secondary reproductive forms. These are capable of mating and the eggs produce either workers, soldiers or even other secondary males and females. These secondaries do not produce wings but mate within the colony. After their appearance colonies grow very rapidly because of the presence of many queens. Large active colonies produce numbers of nymphs which molt to form winged adults, thus completing the cycle.

### Social Organization

A brief description of the so-called castes is in order. I have already mentioned the winged adults and the secondary reproductives. These latter are somewhat larger than the workers but are similar in color.

The workers are white, blind and sexless, and never become anything but workers. They make all excavations, construct shelter tubes when necessary, and feed all other forms.

The soldiers are similar to workers but have large heads with enormous jaws. Their function is protective.

The colony of subterranean termites is not a compact unit. It may be spread over a large area with several reproductive centers connected by a network of runways. Colonies are usually in the soil but may be found in wood. Location is changed with changes in temperature and moisture. In winter, all colonies except those in heated buildings migrate below the frost line.

A queen of our termites seldom deposits more than 60 eggs a day. Large colonies are due (1) to the presence of many queens, and (2) to the 3- to 5-year life of individual workers.

### Habits

The food of termites is cellulose, which is usually obtained from wood or wood products. They prefer damp rotting wood, but may feed on sound dry wood by carrying in moisture and fungi. For this purpose they require a constant source of moisture, which is usually obtained from the soil. They digest cellulose with the aid of protozoa and bacteria, which are always present in the digestive tract.

Termites are capable of persistent concerted action, with behavior that in some cases seems to approach intelligence. They are able to locate susceptible points in buildings by constant searches for new sources of food.

(Continued on page 24)

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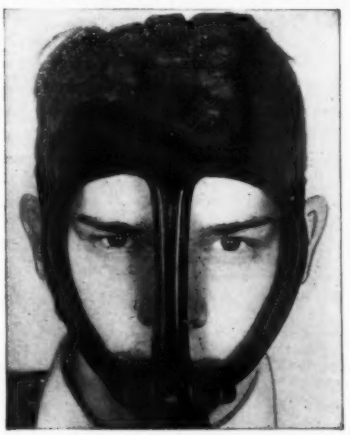

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### Prevention and Control.

It is very natural to attempt to apply the methods of control developed for other insect pests to control of termites. However, the destructive forms of termites live entirely under cover and are difficult to reach with any insecticide. The individuals are very soft-bodied and easy to kill. Trapping and the use of poisoned baits has not been successfully applied to termite control. Spraying the outside of infested timbers has not been of value. Fumigation and application of heat will kill termites but does not prevent reinfestation. Poison dusts injected into termite burrows, while effective for wood-nesting species, have repeatedly failed to control subterranean termites.

On the other hand, the most practical and successful method of control has been to exclude termites from buildings by means of barriers. This method should prevent further entry and kill those termites still in the infested building by cutting them off from their supply of moisture. So far as I know everyone engaged in termite control agrees to this general principle.

Subterranean termites enter buildings at some point of direct or indirect contact between wooden portions of the structure and the ground. Indirect contact includes entry through shelter tubes constructed over foundations, through cracks or voids in foundations or through earth- or cinder-filled masonry porches. An effective barrier must stop termites at all points.

### Elimination of Sources of Food

It is very difficult and often impossible to locate the center of a termite colony. Elimination of the colony is likewise almost impossible. However, the number of termites in a colony can be reduced substantially by reducing the food supply. In all attempts to control termites this is a major consideration. All old stumps fence posts and scrap wood on or in the ground should be removed and burned. Scrap wood buried in the back-fill around foundations is important, but it is sometimes as practical to leave this in the ground as to remove it if a thorough soil treatment is used.

This "sanitation" is a "must" in new construction. It is ridiculous to take all sorts of steps to prevent termite entry in a new building and ignore scrap wood and stumps. To leave these actually invites failure of control measures and cannot be given too much emphasis.

On several occasions I have examined buildings following chemical treatments for termite control. It is not at all uncommon to find infested stumps either under or near the infested building. This puts the chemical treatment to a serious test, because the colony can keep alive for a long time while seeking a way through the treated barrier.

### Elimination of Termites in Existing Buildings

As stated above, all authorities agree that the use of a termite-resistant barrier is the proper method of eliminating termites from buildings. There are two types of barriers: **mechanical,** those made of standard building materials and **chemical,** those set up in soil or wood or both.

### Mechanical Barriers

Termites cannot penetrate solid concrete or solid-unit masonry laid in solid cement mortar. They can, however, construct shelter tubes up over either concrete or masonry. In southern New England such tubes are rare except in poorly ventilated and damp basements or partially excavated areas. They apparently increase in abundance towards the southern part of the country.

Ordinary masonry walls as commonly laid up by masons are not termite-resistant as a rule. This is true because the inner part of the wall is usually hollow and there are many poorly filled joints which termites can enter. In recent years the hollow concrete block has come into favor again for foundations. These hollow blocks are adapted to assist termites in finding the sill of the building. As used now they are usually capped with a solid block so poorly laid that it is not a barrier to termites. And as an added insult, a coat of stucco is applied to the foundation, giving the appearance of a monolithic concrete wall. Operators inspecting houses built recently must be careful not to overlook this feature.

Concrete is a very useful barrier in breaking contact between wood and the soil. It is particularly suited to construction of piers, curbs and platforms under porches, basement bearing posts, partitions and wooden stairs. Solid unit masonry is more suited for underpinning for sills of the building.

Wood perservation will be discussed in another part of this program. It is mentioned here only because in some cases properly treated wood may act as a termite-resistant barrier. It is perhaps less desirable than other building materials for this purpose, because the barrier itself is possible food for termites. Its use in this section is limited by the fact that treated wood is difficult to obtain.

Metal termite shields are by far the most effective barriers yet devised. A metal termite shield consists of a continuous sheet of metal installed completely through or over the foundation between the ground and the first-floor framework and projecting into the open on both sides of the foundation. In the case of masonry porches, hatchways, attached garages, sidewalks, etc., it is so designed to effectively block entrance of termites. Basement partitions are included and the partition shield joined to the main shield. The lower edge of the shield outside the building should be not less than six inches above the ground.

Detailed specifications for shield construction are available from several sources.[1] In Connecticut we have suggested cold rolled (hard) copper as the material, with locked joints. Our suggestions for less extension of free edge than that given by Dr. Snyder are based on the fact that we have very little tubing up over walls in this area.

A properly installed termite shield of non-corrosive metal is the most complete and permanent protection against termites that we have at present. Under the most drastic test, that is, installation in heavily infested buildings, termite shields have worked admirably. A great many pest control operators are still rather skeptical about the effectiveness of termite shields. Just recently an operator reported to me that a termite shield in Milford, Conn., had failed. Investigation showed that this shield was a piece of copper eight feet long on the foundation of a house that was

[1]Protection against termites with copper shields. Copper and Brass Research Assn., 420 Lexington Ave., New York City.

Turner, Neely. Construction of metal termite shields. Pests, Feb., 1939.

**The Fourth Inescapable:**

It has been said life's three inescapables are BIRTH, TAXES and DEATH, to which we should now add a fourth — "PUBLIC RELATIONS." Everyone indulges—even the baby in his own inimitable way—the hermit in his negative sort of way—and of course, with P.C.O.'s, Public Relations are concomitant with and a reflex of their daily activities. You can learn more about this all-important "fourth inescapable" by turning to special article appearing in this current issue headed—**"BUSINESS REQUISITE—PROPER PUBLIC RELATIONS."**

about 25 by 50 feet. By no stretch of the imagination could this be called a termite shield!

Shields are expensive; so are brass water pipes, slate roofs, hardwood floors and automobiles. A few homeowners want the best, and they have no hesitancy in shielding their homes. We have suggested the following as a basis for the use of shields in buildings:

1. In construction of termite resistant buildings on termite-infested sites.
2. In heavily infested buildings of a permanent nature, but highly susceptible to termite entry.
3. In any infested building for which the owner desires complete and lasting protection against termites.

### Construction of Termite-Resistant Buildings

Few pest control operators have been interested in this subject, but it is included for two reasons. In the first place these specifications provide a standard for reconstruction of infested buildings. Secondly, some operators may desire to add services and inspection in construction of termite-resistant structures.

In addition to removal of stumps, waste lumber, form boards, etc., the following specifications have been suggested for Connecticut:

1. Foundations shall be of monolithic concrete or of solid unit masonry laid solid in cement mortar and capped below woodwork with at least one inch of cement mortar.
2. The top of the foundation shall be at least 12 inches above the final grade level.
3. Foundations adjoining masonry porches or terraces shall be of monolithic concrete with an extra thickness to avoid a crack between the fill and wooden portions of the building.
4. There shall be at least 18 inches clearance between the ground and any pipes, air ducts, etc., attached to the floor above in any partially excavated areas.
5. Partially excavated areas shall be provided with ventilation either from the basement or from the outside.
6. No wooden construction shall be used below the first floor framework with the following exceptions:
   a. Basement stairs may be wooden and shall set **on** and not **in** the concrete floor.
   b. Basement partitions may be wooden provided they are set on a concrete curb extending at least 6 inches above the basement floor and are separated from foundation walls by a 3-inch concrete plinth.
7. If specifications 1, 2, 3 or 6 are altered, a metal termite shield shall be installed. No alterations allowable in items 4 and 5.

### Chemical Barriers

As has been stated before, metal termite shields have a successful record of at least 40 years. Chemical barriers have been in use for not less than 40 years, and yet today the real information on them is most fragmentary. There is a continuous series of suggestions for shielding in the literature from the first mention of this method. No such record exists for soil treatment. The same writer may suggest a different chemical each year, usually with the statement that it "appears promising." Fortunately, authentic information is appearing in the literature at a rapidly increasing rate, and before many years we should know enough about


A PREPARED RAT BAIT

19½c PER POUND IN ONE POUND TIN CANS

NO FUSS - NO MUSS - NO MIXING

USE

**HAN-DEE* RAT KILLER**

HAN-DEE Rat Killer is a scientifically prepared rat bait, which is mixed ready for use, you simply open the can and place the baits with a spoon. The toxicant is oven dried red squill, which has been biologically tested.

HAN-DEE is packed in MEAT, FISH and CANTALOUPE baits to afford you a variety of baits, for your convenience HAN-DEE is packed in one pound sealed tin cans—no stale bait to be used next day with HAN-DEE, always ready for use when you need bait.

HAN-DEE may be used with safety in restaurants and packing houses where poisonous materials are prohibited.

Packed in cases of three dozen, one pound cans, either in one kind of bait, or any assortment of the three baits.

*Write For Descriptive Literature*

| | Per Doz. |
|---|---|
| THREE DOZEN (1 CASE) LABELED | $2.50 |
| GROSS LOTS, LABELED | 2.40 |
| GROSS LOTS, NO LABELS | 2.35 |

*Freight prepaid on gross lots to all points east of Rocky Mountains.*

*Formerly SUR-RID

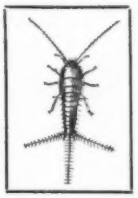
**SUR-RID PRODUCTS COMPANY**

455 PAUL BROWN BUILDING, ST. LOUIS, MISSOURI



*"Positive" - "Safe" and "Sure"*

**USICO SILVERFISH CONCENTRATE**



**"FACTS"**

KNOWN WORLD WIDE!

(1) It will exterminate all Silverfish in building completely and properly treated within 40 days; ONE TREATMENT will protect against reinfestation for THREE YEARS.

(2) Harmless to human beings and animals, simple to apply, no tearing up or marring woodwork, yet placed away from any chance of removal. No inconvenience to tenants whatever.

(3) One pound will treat completely—three 2-room apartments, two 3-room apartments, or a basement room 20x20.

(4) It has fulfilled every claim made for it, under the worst conditions known. Write for testimonials.

(5) "NEW LOW PRICES"—$1.00 per pound, f.o.b. Seattle, Washington. Minimum amount 10 pounds. Shipped express.

(6) *Don't envy the exterminator who can guarantee the above performance, be one!!!*

**U. S. INSECTICIDES CO.**

412 Hoge Building Seattle, Washington

soil treatments to actually predict their success or failure.

As a rule a chemical barrier is established in the soil around an infested building. Some operators add treatment of sills or foundations or both in an effort to complete the barrier.

I do not intend to encroach on the time or subject matter of speakers later in the program. However, there are some definite factors for general discussion. In the first place, the ideal soil treating material should be non-poisonous to humans, without any fire hazard, without disagreeable odor, permanent, and should keep out termites and not injure roots of grass, shrubs or trees. No single material meets even most of these ideal qualifications, and we may never find the ideal. We must select the most desirable material available and use it. The two ideals that cannot be overlooked are the fire hazard and poisonous nature. Materials that are inflammable either in use or afterwards cannot be tolerated. Poisons must be used very carefully, and should be avoided if water is obtained from a well on the premises.

There are definite limitations in physical application of soil treatments. To completely saturate a 4-inch layer of soil around and under a 30x30 house would require about 1800 gallons of treating fluid. Moreover, it would be a hard job to distribute the fluid evenly. If it is put in through holes drilled in the soil the lateral movement is small. If pressure is used the fluid follows the line of least resistance rather than saturating the soil. Furthermore, the soil around the foundation of a building is not in its natural state. Builders commonly bury stones, bricks, tin cans, mortar, cement, lumber scraps and any other refuse in the backfill. This adds immeasurably to the difficulties of treatment. Houses built on rock ledges should be treated easily, because there is so little soil to treat. However, termites seem to be very difficult to stop in such situations.

I will not go into detail about the various treating compounds. There are several available about which we have enough information to state that they are definitely effective under some conditions. These are sodium arsenite or sodium arsenate, creosote, and beta naphthol of established reputation, and trichlorbenzene, pentachlorphenol, tetrachlorphenol and monochlornaphthalene among the newer materials.*

* See also—Hockenyos, G. L. How Long will Termite Soil Poison Treatments Remain Effective? Pests, July, 1940.

### Protection of Shrubbery

So far as is known, all effective soil treating compounds will also kill roots of trees. Barriers of roofing paper and even metal have been used to try to protect roots of trees and shrubs from the soil poison. According to Dr. St. George some serious damage has occurred in spite of precautions. Operators should keep in mind that shrubbery planted around houses is sometimes expensive and valuable. In some cases it would be better to move the shrubbery than to have to pay for it.

### Combination Treatments

Any disinterested person examining the known record of soil treatments will be forced to admit that such treatments are not permanent nor always successful. This does not mean, however, that such treatments should never be used. In March, 1938, I proposed a combination of structural changes and soil treatment as the logical method for use in about 70 per cent of the termite-infested buildings in Connecticut. The minimum changes are as follows:

1. Removal of wood in actual contact with the ground.
2. Provision for adequate clearance and adequate ventilation in unexcavated or partially excavated areas.
3. Placement of wooden bearing posts on concrete piers or replacement by lally columns.
4. Placement of wooden basement partitions on concrete curbs.
5. Replacement of susceptible wooden basement frames with metal frames.
6. Use of metal shielding to protect framework adjoining masonry porches **or** excavation to remove fill sufficiently to protect such framework.

These changes, accompanied by a thorough soil treatment with materials of known value, can really be expected to stop termites in a majority of termite-infested buildings. Furthermore, it is the combination and not structural changes or chemical treatment alone that accomplishes the control. Naturally, this program will be most suitable for buildings reasonably resistant to termite attacks. Some structures are so susceptible to termite entrance that the only change reasonably certain of success is the installation of a metal termite shield. In such cases the owner may prefer a palliative treatment with chemicals rather than a shield. Soil treatment for this purpose may be used:

1. In old colonial houses with porous stone foundations.
2. On inexpensive wooden buildings directly on the ground.
3. On buildings with dead air space in a brick wall or on hollow concrete blocks. (The National Association suggests chemical treatment of the foundation itself.

However, the owner should understand clearly that these treatments are palliative rather than permanent. Buildings on wooden bearing posts (with no masonry foundations) cannot be treated successfully without replacement of the bearing posts. In such construction this replacement is not unduly expensive.

Each infested building is an individual problem in termite control. The factors involved are: (1) the resistance of the construction to attack by termites, (2) the amount of damage and number of termites, (3) the permanency of the building, and (4) the financial situation of the owner. Just because this last item is inserted does not mean that you should find how much money a home owner has before you decide on a method of treatment.

### Guarantee

The guarantee given by the average operator is really an advance charge for re-inspection and possible further treatment. There are sound reasons for collection of such charges in advance. This insures adequate re-inspection. It provides a reserve for additional treatment if it is needed. No entomologist objects to it on these grounds. But it is not a guarantee, and to call it by that name is a mild form of misrepresentation.

### Legislation

Legislation has taken two forms: (a) termite-resistant provisions in building codes and (b) regulation of termite control operators. Pest control operators have a stake in each of these. If the pest control industry is to become a profession, its members of necessity will be forced to consider the benefits to the entire community from any form of pest control. For this reason I would like to express the view that I believe pest control operators should urge that termite-resistant provisions be added to building codes.

The regulation of operators is another problem. Three states have laws of this type. I am not familiar with the laws or with results. In Connecticut we have not sought such a law, but have depended on education of the general public by publicity and of

the pest control operators through the state pest control association to solve the problem.

### Opportunities

There are several opportunities for service in termite control not being accepted by pest control operators in general at present. I will give these in the order of their importance in my judgment.

1. Inspection of buildings for termite damage. This is an important service. The type of work needed is a challenge to well-informed operators. It should start with careful observations on structural features making the building susceptible or resistant to termite attacks. Careful examination of the building should determine whether or not termites are present and if present the probable extent of the damage. All of this information should be summarized in a written report submitted to the owner. And of course a suitable fee should be charged. I see no reason for giving such a service to the public without any charge.

2. A similar service to concerns writing real estate mortgages. There is little interest in this phase now but it is a needed development. Such a service would depend as much on susceptibility to termite attacks and presence of termites on the premises, as on building infestation.

3. General consultation, which would also include the services just mentioned, and in which case the operator should not do any control work. Opinions to carry weight cannot be obscured by any appearance of creating business.

4. Consultation and inspection in construction of termite resistant buildings. This is the duty of architects, but they have not accepted it.

All of these services are open only to experienced and well-trained men. They offer an income for strictly professional activities. There seems to be too little of this sort of work to support a specialist in termites alone. But there is an opening for a few very capable concerns.

### Literature

It would be easy to list a large number of references to termite control. What most of you are interested in is new developments. For the past four years the magazine "Pests" has published more new information than all other sources. Consult your back numbers for papers by George Hockenyos and W. E. McCauley for details about soil treatments, and watch for publications by Dr. Thomas E. Snyder and Dr. R. A. St. George of the Federal Government for general information.

## Jersey Arborists May Try For Titles

**First Examination of Tree Experts Due in February**

New Brunswick, N. J.—The first examination for New Jersey arborists aspiring for official designation as "certified tree experts" probably will be given in February, it was announced at the recent fifteenth annual meeting of the New Jersey Federation of Shade Tree Commissions at the New Jersey College of Agriculture, Rutgers University.

In discussing the recently passed state certified tree experts law, Winston Parker, a member of the Tree Experts Bureau, said that the question of certifying qualified arborists had been raised several years ago by arborists themselves in an effort to safeguard the interests of the profession and the tree-owning public.

"The law," he explained, "provides that any qualified arborist who has been engaged in such work for five consecutive years, or who is technically trained, may apply for an examination by the Tree Experts Bureau. Successful passage entitles him to a certificate and the privilege of using the term 'Certified Tree Expert.'"

*—New York Times.*

## Our Research Bottleneck

(Continued from Page 11)

uously destroying millions of dollars in property, contaminating foods and endangering the health and life of communities in the war against them. There can be no letdown. Blackouts are of no avail. Sudden drives give only temporary relief. In such a fight the people look to us as pest control operators to protect them against these household pests. Frequently all operators are faced with species against which they cannot successfully cope, because of lack of available knowledge. Therefore, research in the field of household pests is most vital and should be carried on by the Bureau of Entomology and Plant Guarantine of the Department of Agriculture. They are qualified and can do a thorough job if funds are made available. We cannot urge research work too strongly.

Otto Orkin, President,
Orkin Exterminating Co., Inc.

* * *

**ST. LOUIS, MO.**—At a recent meeting of this association, the need of more government research concerning the control of household pests was discussed at geat length. The consensus of opinion was that in addition to this research being carried out by separate organizations and individuals, the government should take a greater interest than heretofore. It was pointed out that the various government agencies having considerable data on hand can accomplish immensely greater results more economically than widely separated efforts. A motion was unanimously passed that the secretary be authorized to wire our request for appropriation to further these efforts on the industry's behalf.

St. Louis Pest Control Ass'n.

* * *

**CHICAGO, ILL.**—(and speaking for 16 offices from coast to coast, Gulf of Mexico and Canada)—We want to be on record as favoring additional research in the field of household pest control, particularly as it deals with insects. We think throughout the years most of the research has been done on agricultural pests and very little attention has been paid to household pests, even though they are more prevalent and probably do more damage across the length and breadth of our country than do the other pests mentioned above.

It is high time that some organized effort be put forth to have additional research work done to the end that this might be passed on to those of us who are actually on the firing line, that we might better serve our customers who constitute the public.

Rose Exterminator Company,
C. Norman Dold, Manager.

EDITOR'S NOTE: *It is our suggestion that all pest control firms of the United States can cooperate in a very tangible manner if every P.C.O. would contact his own Congressman and urge that he take a vital interest in seeing to it that the amount in question be included in the budget. Urge your local Congressman to contact the Subcommittee on Agriculture Appropriations and insist that money be appropriated for this much needed research of household and structural insects, pests and vermin.*

All the problems of the world could be settled easily, if men were only willing to think. *—Dr. Nicholas Murray Butler.*

**Manufacturers Exterminating Supplies**

Write Today for Complete Catalog

**Thos. W. Houchin Corp.**
87 Ferry Street
Jersey City, N. J.

Estab. 1851

**Special This Month**
10% discount on all orders
FOR
THALLIUM IMPREGNATED CANARY SEED
FOR MICE CONTROL

**BIRD REPELLENT**
Keeps buildings free from roosting birds.

**PEST CONTROL CHEMICALS CO.**
P. O. Box 37 Write for Details BUFFALO, N. Y.

# Federal Trade Commission Releases Information of "Cease and Desist" Stipulations About Rats, Mice and Moths

The Federal Trade Commission has accepted stipulations to cease certain representations in the sale of products, and representations made in advertising of such products.

1. **Rats and Mice:** a. "F. LUCAS, an individual, 174 West 65th Street, New York, New York, vendor-advertiser, was engaged in selling a mouse-killing preparation designated 'Flu-Mous-Ded.'

"In a stipulation filed and approved by the Federal Trade Commission the vendor-advertiser agreed, in connection with the dissemination of future advertising, to cease and desist from representing directly or by implication:

(a) That Flu-Mous-Ded is sure death to mice;

(b) That it will drive mice outside to die;

(c) That mice destroyed by it will leave no decomposition odors;

(d) That it is the most effective rodenticide;

(e) That it is used everywhere by pest control operators, warehousemen, and feed men, and in food packing plants or places used for like or similar purposes.

"The said F. Lucas agrees not to publish, or cause to be published, any testimonial containing any representation contrary to the foregoing agreement."

b. "CARBOLA CHEMICAL COMPANY, INC., a corporation, Natural Bridge, New York, vendor-advertiser, was engaged in selling a liquid rat and mice destroyer, designated 'CCC' Rat Killer.

"In a stipulation filed and approved by the Federal Trade Commission the vendor-advertiser agreed, in connection with the dissemination of future advertising, to cease and desist from representing directly or by implication:

(a) That said preparation attracts both rats and mice because it is sweetly flavored or that it attracts, will be eaten by, or kill mice of kinds other than house mice; or

(b) That said preparation kills entire families of rats or mice, or that it poisons the milk of nursing mothers, or that it infects or kills the nursing young, or that it is 100% effective; or

(c) That the said preparation causes rodents to die outdoors, or that it will kill or cause rodents other than rats and house mice to die, or that rats or mice eating it rush for or seek water and seldom die indoors; or

(d) That the preparation is 'absolutely' safe for use about the house, farm, public markets, grain houses, meat markets, etc., or in any place where small children, pets, poultry or other animals might eat it.

"The said Carbola Chemical Company, Inc., agrees not to publish or cause to be published any testimonial containing any representation contrary to the foregoing agreement."

c. "CENOL COMPANY, INC., 4250-56 North Crawford Ave., Chicago, engaged in selling two rat killing preparations designated 'Cenol Squill Powder' and 'Cenol Rat Destroyer,' has stipulated with the Federal Trade Commission to cease representing that 'Cenol Squill Powder' will kill any species of mice except house mice, or that it is the leading 'raticide' in the United States and is superior to or more effective than similar preparations containing the same amount and toxic quality of red squill powder.

"The respondent also agrees to desist from representing that 'Cenol Rat Destroyer' will destroy any species of mice except house mice, or that the effect of the barium carbonate content contained in 'Cenol Rat Destroyer' will drive poisoned rats out of doors to die in the open."

d. CHAS. DENNY, trading as Sur-Rid Products Company, 455 Paul Brown Building, St. Louis, engaged in selling a rat killing preparation designated "Sur-Rid Rat Killer," has stipulated with the Federal Trade Commission to discontinue representing that he tests every lot of the product, or that he guarantees the killing power of the product, and further agrees to cease and desist from using the term "Sur-Rid" or any other similar term or words as a part of the brand name of the product, or from otherwise representing or implying that it is sure in action or that its use will rid premises of rats.

2. **Moth Proofing:**

a. BERNHARDT PETERSON, trading as Berlou Manufacturing Company, Marion, Ohio, engaged in the manufacture and sale of an alleged mothproof preparation designated "Berlou," has entered into a stipulation with the Federal Trade Commission, in connection with the advertisement, sale or distribution of his product, to cease and desist from use of the word "permanent" or "life-time," or of any other words of similar implication as descriptive of the protection against moths allegedly afforded to fabrics treated with his product, and from use of the word "permanent" or "life-time" or other words or representations the effect of which may tend to convey the belief to purchasers that the moth immunizing effect of his product will last, continue or endure forever.

b. BUHACH PRODUCING & MANUFACTURING CO., a corporation, 37 East Channel Street, Stockton, California, vendor-advertiser, was engaged in selling an insecticide designated BUHACH.

"In a stipulation filed and approved by the Federal Trade Commission the vendor-advertiser agreed, in connection with the dissemination of future advertising, to cease and desist from representing directly or by implication:

(1) That said product is effective in killing all species of moths or all insect pests;

(2) By use of the words 'get rid of,' 'banish,' or any other words of similar import or meaning, that Buhach, when spread across the trails of ants or roaches, kills or repels all of such pests.

"The said Buhach Producing & Manufacturing Co. further agrees not to publish or cause to be published any testimonial concerning any representation contrary to the foregoing agreement."

c. "The PURO COMPANY, INC., a corporation, 3107 Pine St., St. Louis, Missouri, vendor-advertiser, was engaged in selling a moth repellent designated PURO.

"In a supplemental stipulation filed and approved by the Federal Trade Commission the vendor-advertiser agreed, in connection with the dissemination of future advertising, to cease and desist from representing directly or by implication:

(a) That Puro will protect upholstery from damage by moths;

(b) That Puro is brand new, an amazing discovery, is just out, contains a secret chemical, or by any other terminology that Puro is new or different from all other moth preventative;

(c) That persons selling Puro are earning fortunes thereby, or are making $5 to $8 per day;

(d) By the use of such words as 'up to,' 'as high as,' or any words or terms of like import that prospective agents, salesmen, distributors, dealers or other representatives can make earnings or profits within any specified period of time of any amounts which are in excess of the net average earnings or profits within like periods of time made by a substantial number of its active full-time agents, salesmen, distributors, dealers or other representatives in the ordinary and usual course of business and other normal conditions and circumstances.

"The said The Puro Company, Inc., agrees not to publish or cause to be published any testimonial containing any representation contrary to the foregoing agreement."

## Mouse Squeals to Operatic Score

Kansas City.—Miss Jeanne Madden was singing softly as the curtain rose for the Philharmonic Orchestra's dress rehearsal. Out ran a mouse. Miss Madden scrambled atop a table. A stage hand went into action and the mouse squealed his swan song to the strains of "Hansel and Gretel."

SELL THE NEWEST ITEMS IN SANITARY SUPPLIES UNDER YOUR LABEL

● *Write for Catalog and Information*

FULD BROS.
702-710 South Wolfe Street
BALTIMORE, MARYLAND

## Fundamentals of Advertising

(Continued from Page 17)

better be called an announcement) of a chemical company addressed to one of your conventions. "XYZ company's manufacturing resources, its rigid technical control of quality, its nationwide distribution and service are companion factors. In combination, they explain why the XYZ company name and trademark are recognized as the sign of a dependable source of supply." As you note, there is not even an express superlative. One **might** even say it is so dignified as to be almost stuffy.

Another company lists products, and then, in a very restrained way, says, "For more complete information on O.K. fumigants write XYZ."

Another company does use the superlatives, "finest available" and "finest milled," but even these seem unobjectionable. Another says "unsurpassed"—but that too is not unmannerly (would have been better if not used).

One human emotion, not the highest or pleasantest in our race, and one that is appealed to largely in advertising, is fear. And fear is one which you gentlemen almost have to use. I have seen it used, justifiably, no doubt, and effectively, in your termite advertising.

And I am interested to see some of you using humor — seemingly a very good appeal—in connection with or as an antidote for fear. The timely phrase "Fifth Columnist" has been applied to the insect population. And the rat, which peers dangerously from the top of one folder, is, actually, a rather beautiful IF DEADLY animal! And there are the ads which no doubt you all have seen using the phrase "Public Enemy Number One," and personifying Pests from Samuel Silverfish to Molly Moth—very good —good information, good humor.

When Professor Davis asked me to do this talk, I tried to prepare to cover up my ignorance by reading some of the literature of your association and the advertising of some of your members, which literature the entomological gentleman very kindly lent me. I read the material, and I learned a good deal about your work, at least a little, as you see.

Here was I, an old school teacher who had been for a generation trying to make young people in four year periods on the campus write the English language with care and accuracy as well as with vividness and lively colloquialism. The students, I confess, largely resist. We have to use some force. One small adventure in advertising criticism for the Illinois Central Railroad taught me that what at least one advertiser wanted was attention, liveliness, naturalness, and NOT the sort of accuracy in choice of words, phrasing, grammar, punctuation that we, largely teach — or try to teach. Of course I still believe in the care and the accuracy, in the grammar, punctuation, the conventional spelling, say.

And so—I have prepared a couple of sheets of stuff in my real line, which will be dull, but stuff I really know something about, and Mr. Davis has put it into mimeo form. The material wholly from Pest Control literature. If my school teacherish suggestions are not clear, ask me what I am trying to say.

Thank you very much for the opportunity to talk to you.

---

A female Black Spider, says a Government Entomologist, eats her mate just because she is hungry and cannot find other food. Of course, it may also be she just wants to know where he is at all times.

—*Science News Letter.*

## Fumigants

(Continued from Page 15)

mention the fact that they will turn a deep red in 10 seconds if the concentration is 890 parts per million, or 1 ounce per 1000 cubic feet. A deep pink color is obtained in one minute with a concentration of 89 parts per million. If either of these reactions is obtained it will be seen that the concentration is still too high for occupancy. If the paper is exposed for 8 minutes and only a slight pink color is obtained, the concentration of HCN indicated is approximately 9 parts per million. This would be the concentration which would be considered safe for occupancy. These papers may be made up by any pharmicist and are relatively inexpensive. Their use can certainly serve to give the operator a definite sense of security in turning over the building after a fumigation with HCN.

---

## "Termites and White Ants in Borneo Eat Author Out of House and Home"

Agnes Newton Keith, in her recent book, "Land Below the Wind," published by Little, Brown & Co., relates the following experiences: "Then moving day came and went, but not with the ease which the words imply. It was a grievous revelation of the hidden frailities of our household goods. When we took the bed apart it disintegrated into predigested termite food, the cupboards had no backs when moved from the wall, and the tables that had crossed their legs at ease in corners topped over. The whole was a sad exposure of clay feet. . . .

"Once we had a very nice woven-grass Shanghai mat. It was so large it covered the living-room floor of chipped cement, and so new it wasn't paid for. The white ants came up through a crack in the floor and ate their way across the mat from corner to corner. Between the hours of 8 p. m. and 8 a. m. they ate, digested and excreted the mat. I remembered then the words of Government House Nanny, who had just come out from England: 'The whole of Borneo is nothing but an anthill!' "

CUTS—It Pays to Illustrate

Write for Prices and Information

PESTS, Cut Dept.
512 East 14th St. Kansas City, Mo.

THALLIUM SULPHATE

Manufactured by

"PECHINEY"—FRANCE

— DISTRIBUTORS —

Var-Lac-Oid Chemical Co.
116 BROAD STREET - NEW YORK, N. Y.

# LOCAL ORGANIZATION NEWS

## New Jersey Pest Control Association

The regular meeting of the New Jersey Pest Control Association was held at the office of the Western Exterminator Company on Tuesday, January 28th, 1941, President Joseph L. Geisman presiding. After reading of the minutes by Secretary John K. Medoff and a few words of greeting by Secretary "Bill" Buettner of the National Pest Control Association, the meeting was concerned with the continuation of lecture course and discussion of rats and mice.

Ernest L. Mills, Predator and Rodent Control Division of the Fish and Wildlife Service of the U. S. Department of Interior, gave an enlightening discussion of the biology of rats, showing the spread of infestation and health hazards involved. Various traps as well as baits were discussed.

The next meeting is February 25th, but comments will come too late for inclusion in the March issue of PESTS.

Among those present were: Murray I. Breecher, Federal Vermin Ext. Co., Inc., Jersey City, N. J.; John K. Medoff, Hudson Exterminating Company, Inc., W. New York, N. J.; H. C. Krauss, Abbay Exterminating Company, Newark, N. J.; B. E. Weeing, Hudson Exterminating Company, W. New York, N. J.; Joseph L. Geisman, Sanitary Exterminating Company, Jersey City, N. J.; Fred A. Klein, Hudson Exterminating Company, W. New York, N. J.; J. Edwin Sameth, Western Exterminating Co., Inc., Newark, N. J.; Thos. M. McGrath, Department of Health, Newark, N. J.; W. O. Buettner, National Pest Control Association, Brooklyn, N. Y.; Ernest G. Mills, Predator and Rodent Control Division, Fish and Wildlife Service, U. S. Department of the Interior, New Bruswick, N. J.; Joseph Gorman, Sano Service Company, Newark, N. J.

## St. Louis Pest Control Association

The annual dinner-dance and installation of officers of the St. Louis Pest Control Association was held at the York Hotel on Wednesday night, January 15. Practically all members attended and there were quite a few guests present.

Immediately following the banquet, Mr. Charles Denny, the retiring Secretary, called on Mr. W. E. Martin of the Bug Death Products Company for a brief outline of the history of the association. Mr. Martin told how the association was started by a group of fumigators who felt the need for a better understanding as to the proper fumigation procedure that should be followed in the interests of the general public; and that within time the association grew to include the related industries of exterminating and termite control.

Mr. Denny then introduced the new officers for the year 1941, each of whom pledged himself to work for the betterment of the association.

The floor was then cleared for dancing, which went on 'til the wee, small hours of the morning.

## Greater Kansas City Pest Control Association

On January 27 the P.C.O. Association of Greater Kansas City operators held their regular monthly meeting, this being a business meeting preceded by a dinner. Election of officers was an important phase of the meeting and all officers were reelected. They are: President, R. Shuyler; Secretary and Treasurer, Al Cossetta; Directors, F. R. Andrews, Phil Burnett and Frank Gates.

The general discussion included fumigation practices, termite policy and an insignia for the local association. The following members were present: R. Shuyler, Phil Burnett, Frank Gates, E. Wilbur, F. R. Andrews, D. E. Reck, N. Pulley, Chas. Bedingfield and Al Cossetta.

## Northern California Operators Meet

Since the start of the Annual Pest Control Operator's Conference it has been the the custom to hold a "pre-conference meeting," to which all operators in the northern part of the state are invited. At the first meeting there were but fourteen in attendance. At the second meeting there were twenty-nine present. On this basis plans were made for forty places at the meeting held last month at the Hotel Durant. In order to play safe in having plenty of room it was arranged to have the dinner meeting in the Terrace Dining Room, which has a seating capacity of fifty-five. However, much was the surprise when two days before the meeting the conference secretary reported that sixty-eight reservations had already been requested. Thus, it immediately became necessary to make arrangements for a larger dining room. On the night of the meeting the dinner was held in the main dining room where the number had finally reached seventy-three.

At this gathering the operators had come from San Jose and all points between there and Sacramento. "Dad" Alderman made a special trip from Pasadena in order to represent the National Pest Control Association and say a few words to the boys. Professor Herms and Dr. McLeod were on deck to give an outline of the work being done to make the conference even bigger and better. Prof. Herms expressed his pleasure at seeing such a large number present which, he stated, was proof in itself that the operators are certainly very seriously interested in their work.

## The Associated Pest Control Operators, Inc., of Los Angeles, Calif.

The regular monthly meeting was held February 12th, at Eaton's Chicken House. Principal subject of discussion was Assembly Bill 1057 as proposed by the Associated Pest Control Operators in collaboration with T. J. Cunningham, attorney of the association, who was also one of the speakers.

President Dave Rennie presided.

## Southern California Operators Meet

Sixty-four members of the pest control industry of Southern California held a very successful dinner meeting in Los Angeles on the evening of January 24. In an adjoining room the "Lady Bugs," (State Association Auxiliary) 20 in number, met and discussed matters of interest to their group. "Dad" Alderman was on hand at this meeting also (men's section). The principal topics of the evening fell under four main headings: 1. Pest Control Operators Conference. 2. Annual Meeting of State Association in San Francisco. 3. National Association Meeting in San Francisco. 4. Legislation. Mr. A. L. Forde of District No. 2 acted as chairman of the meeting. A considerable part of the evening was given over to the subject of legislation. Those participating in the discussion included Messrs. Miller, Rennie, Alderman, Foote, McNatt, Burgin, Hugh Smith and W. Gunn.

What was perhaps of most interest was a vote favoring but one license fee for pest control operators in California. This vote stood 44 favoring one license, 1 vote in favor of intermediate licenses, and 19 in attendance who chose not to vote. This should be a pretty good indication of what the operators themselves want injected into the law.

It is recommended that each operator in the State of California write to the Legislative Bill Room, State Capitol Building, Sacramento, and request a copy of Departmental Bill No. 1057. It is advisable to include a self addressed and stamped envelope for your reply.

## North Central States Entomologists Meet at the University of Missouri

March 27 and 28 are the days scheduled for the annual conference of the North Central States Entomologists to be held at the University of Missouri, Columbia, Missouri. This conference of mid-western entomologists is held annually to discuss insect problems and research studies of the preceding year and plans for the coming year. There will be no prepared papers, but each major problem will be opened by someone who will outline the problem and lead the discussion by those present.

A major feature of the conference will be a discussion of Entomology and the Preparedness Program, which will be of interest to pest control operators. Sectional sessions will include cereal and forage crop insects, greenhouse and vegetable insects, insects affecting man and animals, stored products insects, fruit insects, beekeeping, household pests and the work of the pest control operator, plant breeding for insect resistance, and insect photography.

Pest control operators are invited to attend and participate in the meeting. Those interested may obtain a program by writing Dr. Leonard Haseman, Head of the Department of Entomology, University of Missouri, Columbia, Missouri, who has charge of the conference.

"There is no failure except in no longer trying,
There is no defeat except from within, no really insurmountable barrier save our own inherent weakness of purpose."
—Elbert Hubbard.

# WHAT'S NEW IN PEST CONTROL-PERSONALS

G & S Exterminating Supply Co. announces that due to the ever increasing demand for their rat glue products, they have opened a warehouse located at 661 Park Avenue, Brooklyn, N. Y., which will enable them to make speedier deliveries.

Bill Buettner blew out the candles on another birthday cake on a certain day in February. Many happy returns Bill, and many more happy birthdays.

Our peripatetic reporter informs us that Mrs. J. J. Davis (the Professor's better half) was in New York Town recently for a short spell. One evening Mrs. J. J., in the company of Miss H. A. Whelan of the Prentiss Co., took in the "sights" by starting off at the Fifth Avenue Hotel on lower Fifth Avenue and later dining at Bertolotti's, a restaurant of distinction, in famous Greenwich Village.

John Opitz, Inc., 50-14 39th Street, Long Island City, N. Y., has recently issued a pictorial broadside of pests, and comments about these pests, which has display value. If you have not a copy of the J-O chart on "Antidotes for Poisons," write for it also.

Congratulations are in order for Mr. and Mrs. Virgil Laird of the A. & M. Termite Co., Stillwater, Oklahoma, on the arrival of their new-born baby, which their announcement describes in the following unique manner:

Scientific Name: Hainds Elliott.
Genealogy: Of Mr. and Mrs. Virgil Laird.
Date of Emergence: Dec. 22.
Description of species:

Color, pinkish red. Back and top of head covered with fine brown hair. Eyes brown. Pronotum pudged. Chitin of bottom segment slightly corrugated. Wing expanse 18". Length 18.5". Wt. 8 lbs. 3 oz. Species very uncommon in some families, appearing only once in seven years.

When visiting firemen from points east arrive in the City of Angels—or Los Angeles, if you prefer—they usually move in lock, stock and barrel on the always welcoming, genial host, Carl Strom (and family), of the Western Exterminator Co. He immediately suspends all his pest control activities and "Grover Whalens" (Exp. note for residents outside N. Y. City area—Grover Whalen was the city's former ambassador of good will for welcoming visiting potentates) them on a round of general good cheer. Because Carl is no one to keep his pleasures to himself, his entire family joins right up with the festivities. Their hospitality now breaks the news. In the rotogravure section—Los Angeles Times—Jan. 26th issue, an almost entire page is given over to depicting the Strom family in the process of reversing the process and moving in on a young couple whose apartment is just big enough for them and their dog, with the resultant discomforts experienced by all humorously portrayed. Maybe it's a hint—maybe—but Carl just so as you'll have plenty of notice we are stopping off en route next October. The page of cartoons was most enjoyable.

J. L. Hopkins & Co. announces the appointment of John G. Van Nortwick to the office of Vice President in Charge of Sales. Mr. Van Nortwick is well-known to the industry and his many friends will be glad to know of this promotion.

W. E. Dees has recently been appointed as Resident Sales Manager by J. L. Hopkins & Co. He has been associated with J. L. Hopkins & Co. since 1937, and prior to this time had served other firms in very important positions. In his new position as Resident Sales Manager, he continues the policy of research and development which has brought Hopkins Laboratory Specialties to the forefront of their field.

Max Rukin announces that the Industrial Fumigant Co. has now arranged that their whole business—fumigating chambers, vacuum tanks, chemicals, office, etc., is under one roof, the location being 5955 West 65th St., Chicago, Ill.

Word from Sidney Wimmer tells us he is enjoying a well earned vacation in Miami Beach, Florida. Have a little fun for us, Sidney.

A surprise visit was paid PESTS' office by David W. Lynch, of John Powell & Co. Dave is making his customary southern trip, which usually takes several weeks. We trust that the famed southern hospitality will not affect his equilibrium. Come again, Dave, we are always glad to see you.

Another unexpected pleasant surprise was a visit by our good friend, John Potts Linn, of Omaha, Nebraska. We were glad to see you again, John.

The Chipman Chemical Co., Inc., announces the appointment of Mr. Keith Sime as Northwestern representative with headquarters at Portland, Ore. Mr. Sime has had extensive agricultural experience, especially with weed control, and his knowledge in this field is thus made available to Chipman's many customers and friends.

The Chipman Chemical Company, Inc., also announces that it will act as selling agent for the Sodium Chlorate production of the Pennsylvania Salt Manufacturing Company's new plant at Portland. This new plant will be in production during the summer of 1941.

## N. Y. SANITARY COMMISSIONER FOR MOSQUITO WAR

William F. Carey, Sanitation Commissioner, New York City, requested an additional appropriation from the Budget Director recently for $212,280 for a mosquito extermination force of 100 men. The force would pick up the work formerly done by WPA labor, which has now been withdrawn. The force would spread insecticide on marshes and swampy areas in the city to eliminate the breeding of mosquitoes.

A card of introduction over the signature of Master Ronald Maheu tells us that he arrived safe, sound and in good health (thank you!) on February 14, 1941, that his weight (at ringside) was 6¼ lbs., and that his parents are Mr. and Mrs. P. Henry Maheu, Mysterious Chemical Co., Montreal, Canada. Congratulations to you, Ronald, for possessing such swell parents. We say this advisedly since we knew them long before you did. Felicitations are also in order for the Maheus in having a prodigy son who it seems was able to write at the very moment he gave vent to his first cry. We are putting Donald down for a lead article in PESTS one of these days.

Attention is called to Termite Service Bulletins issued by Termite Control Corporation, 9 W. 29th Street, N. Y., as indicative of type of effective industry publicity. The bulletins are sub-headed "For The Advancement of Accurate Termite Information and Ethical Standards of Control," thus giving them the desired professional

TENACIOUS ODORLESS
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FOR
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touch. One of the bulletins discusses "Dissecting the Termite Problem." Another, "What Are Termites?" with an added page of line cuts illustrating Life Cycle of the Termite, courtesy of University of California Press.

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The Owl Exterminator Company of Racine, Wisconsin, is to have a booth exhibit in the Home Show at Racine, March 26th to 29th. H. E. Johnson, owner of the Owl Exterminator Company, will have as his assistant, Mrs. Betty Johnson. Best of luck, Howard and Betty.

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The interests of the Lethelin Products Company, Inc., formerly held by the F. W. Berk Company of Wood Ridge, New Jersey, have been purchased by George G. Wittwer and William O. Buettner. The plant and office of the Lethelin Products Company, Inc., are now located at 341 North High Street, Mount Vernon, New York, which is also the home of the W. B. Chemical Company. Under the new regime, the company is now operating in full swing and is in a better position than ever to give service to the many users of Lethelin products, which include Magikil Jelly Ant Bait, Borerkil, Japex, and Paratox. Work is now under way on a new, refillable ant trap, for use by Pest Control Operators. Announcement will be forthcoming as soon as tests have been concluded.


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Our new 1941 brush catalog is now ready for distribution. We show the most complete line of brushes in the U. S., including floor brushes and miscellaneous items for the janitor trade. Ask for your copy of this big catalog today.

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# Additional Patents Relating to Pest Control

*By* DR. R. C. ROARK

EDITOR'S NOTE: *This service is provided through the Department of Agriculture for the purpose of bringing to the attention of those interested such matters that may be of assistance to the industry. The Department of Agriculaure assumes no responsibility for the merits or workableness of of any of the inventions mentioned. Copies of all patents can be obtained for 10c (no postage stamps) sent to the Patent Office, Washington, D. C. When placing orders be sure to note the number of the patent, the date, the name of the patentee and the subject of the invention.*

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2,209,970 (Aug. 6, 1940; appl. Apr. 17, 1936). WOOD PRESERVATION. Harold R. Hay, St. Louis, Mo.; Monsanto Chemical Company, St. Louis, Mo. A wood preservative comprises a mixture of a pentachlorphenol salt and an alkylated and sulphonated phenol.

2,210,174 (Aug. 6, 1940; appl. Oct. 9, 1939). RODENT TRAP. Frank V. Moore, Holton, Kans.

2,210,253 (Aug. 6, 1940; appl. Aug. 4, 1939). COCKROACH TRAP. Victor C. Neuens, Taft, Calif.

2,210,658 (Aug. 6, 1940; appl. May 20, 1939). RAT GUARD FOR NAVAL SHIPS. Sam Fassman, Brooklyn, N. Y.

2,210,894 (Aug. 13, 1940; appl. Jan. 18, 1939). INSECTICIDAL EMULSION COMPOSITION. Edgar C. Britton, Midland, Mich.; The Dow Chemical Company, Midland, Mich. An aqueous insecticidal emulsion suitable for application to living plants without causing injury thereto, comprises up to about 5 per cent of an oil having an unsulfonatable residue of at least 50 per cent by weight and up to about 0.5 per cent of a compound selected from the group consisting of 2.4-dinitro-phenol and 2.4-dinitro-alpha-naphthol.

2,210,900 (Aug. 13, 1940; appl. July 31, 1939). INSECTICIDAL SPRAY. Gerald H. Coleman, Midland, Mich.; The Dow Chemical Company, Midland, Mich. An insecticidal spray comprises a petroleum distillate having dissolved therein as the principal toxic ingredient an aryloxy-polyalkylene ether chloride having the formula R-O-($CH_2CH_2$-O)n—$CH_2CH_2$-Cl wherein R represents an aromatic radical, and n is one of the integers 2 and 3.

2,210,945 (Aug. 13, 1940; appl. May 20, 1940). DUSTING COMPOSITION. Lindley E. Mills, Midland, Mich.; The Dow Chemical Company, Midland, Mich. An insecticidal dust comprises as a major constituent walnut shell flour of smaller particle size than 100 screen mesh and intimately incorporated therewith a relatively small amount of a methyl or ethyl dinitro-phenol.

2,212,032 (Aug. 20, 1940; appl. May 8, 1939). DUSTING MACHINE. Richard Moon, Eddy, Tex.

2,213,156 (Aug. 27, 1940; appl. June 4, 1938). INSECT REPELLENT. Philip Granett, New Brunswick, N. J.; National Carbon Company, Inc. An insect repellent compositiin consists of an inert diluent and a repellent; said repellent consisting of at least one compound having the formula $R_1$-O-($C_2H_4O$)n -$R_2$, wherein $R_1$ may be a lower alkyl group, monocyclic aryl group, or aralkyl hydrocarbon group, $R_2$ may be hydrogen, a lower alkyl group, monocyclic

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INC.
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This picture is another splendid example of what can be accomplished by the way of worthwhile advertising. Congratulations, Max.

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aryl group, aralkyl hydrocarbon group or acetyl group, and n is 1 or 2.

2,213,214 (Sept. 3, 1940; appl. Feb. 25, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. The patentee claims an insecticidal composition containing a phenyl benzyl ether having an organic acyl group as a substituent in at least one of the benzene rings. An example is para benzoyl phenyl benzyl ether.

2,213,215 (Sept. 3, 1940; appl. Feb. 25, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. An insecticidal composition contains a tertiary amyl phenyl benzyl ether.

2,213,216 (Sept. 3, 1940; appl. Feb. 25, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. An insecticidal composition contains a thiocyanomethyl phenyl benzyl ether.

2,213,217 (Sept. 3, 1940; appl. Mar. 4, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. An insecticidal composition contains the dibenzyl ether of resorcinol.

2,213,218 (Sept. 3, 1940; appl. Apr. 19, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. An insecticidal composition contains the benzyl ether of 2-hydroxy methyl benzoate.

2,213,219 (Sept. 3, 1940; appl. May 5, 1939). INSECTICIDE. William F. Hester, Drexel Hill, Pa.; Rohm & Haas Company, Philadelphia, Pa. An insecticidal composition contains p-tertiary butyl-o-acetylamino phenyl benzyl ether.

2,213,380 (Sept. 3, 1940; appl. Aug. 28, 1937). TERMITE CONTROL. Allan P. Bloxsom, Houston, Tex. An insect controlling foundation comprises support members of an intimate mixture of hydraulic cement and a volatile insect repellant (e. g. cresylic acid) and downwardly opening pockets in the surface of said members to entrap light repellant gases therein.

2,213,491 (Sept. 3, 1940; appl. June 10, 1939). INSECTICIDE DISPENSER. Jack P. Fullilove, Shreveport, La. This insecticide dispenser is designed to be rotatably mounted on an ambulatory carrier for movement into contact with field plants.

2,213,846 (Sept. 3, 1940; appl. Aug. 27, 1938). SPRAY DEVICE. Stanley Meyer, Queens, N. Y.

2,214,562 (Sept. 10, 1940; appl. Aug. 15, 1939). METHOD OF TREATING POULTRY AND OTHER EDIBLES. Maurice B. McCadam, Ogdensburg, N. Y., and Milton G. Dimon, Wellesley, Mass.; E. I. du Pont de Nemours & Company, Wilmington, Del. A method of treating non-living poultry meats and fish in order to prevent deterioration thereof comprises wetting said articles of food with a liquid containing a non-carboxylic surface-active agent having at least 8 carbon atoms in the molecule.

2,214,782 (Sept. 17, 1940; appl. Aug. 2, 1937; in Germany Aug. 2, 1936). INSECTICIDE. Hans von Philipp, Leipzig, Germany; Fritz Schulz jun., Aktiengesellschaft, Leipzig, Germany. The patentee claims the process of increasing the effectiveness of insecticides which consist essentially of chlorinated hydrocarbon compounds selected from the group consisting of the mono- and dichlorobenzenes, which comprises activating the said insecticides by adding a relatively small percentage of a chlorinated aliphatic compound selected from the group consisting of hexachlorethane, acetone chloroform, and chloral hydrate. An example is paradichlorbenzene which contains, as an activating ingredient, not more than about 5 per cent of hexachlorethane.

2,214,798 (Sept. 17, 1940; appl. Dec. 29, 1938.) DEODORANT CONTAINER FOR TOILET BOWLS. Max F. Reikosky, Trenton, N. J.

2,214,962 (Sept. 17, 1940; appl. Oct. 30, 1936). METHOD OF MOTHPROOFING MATERIALS. Daniel H. Jones, Collingswood, N. J.; J. Harold Boss, Melrose, Mass. A method of treating fabrics or other materials, which are wholly or in part of animal origin, to render the same resistant to moths, comprises applying to said material an aqueous solution containing a complex salt, said complex salt containing antimony and fluorine and including all the active moth resisting materials used in said solution.

2,214,972 (Sept. 17, 1940; appl. May 18, 1939). DEVICE FOR CLEANING TOILET HOPPERS AND THE LIKE. Edward M. Ries, Camden, Ohio.

2,215,028 (Sept. 17, 1940; appl. Mar. 27, 1939). MOUSE OR RAT TRAP. Olin R. Booth, Cainesville, Mo.

2,216,644 (Oct. 1, 1940; appl. Sept. 15, 1939). MOUSE TRAP. Frank Heldman, Spring Valley, N. Y.

2,217,265 (Oct. 8, 1940; appl. Sept. 16, 1938). WOOD PROTECTION. Francis E. Cislak, Indianapolis, Ind.—Peter C. Reilly. —A process of protecting wood, comprises impregnating the wood with creosote and then applying to the creosote-impregnated surface of the wood a coating comprising a solution of a phenol-formaldehyde resin in a volatile solvent, and a catalyst promoting setting of such resin.

2,217,358 (Oct. 8, 1940; appl. Apr. 25, 1939; in Netherlands, May 24, 1938). INSECTICIDE AND FUMIGANT. Willem Coltof, Amsterdam, Netherlands.—Shell Development Company, San Francisco, Calif. —An insecticide and fumigant composition contains as a toxic principle an alkene halogen thiol containing from 2 to 6 carbon atoms. An example is ethylene thiobromhydrin.

2,217,566 (Oct. 8, 1940; appl. June 9, 1934). INSECTICIDE. Lloyd E. Smith, Washington, D. C.—Public of the United States of America.—An example is phenothiazine.

2,217,611 (Oct. 8, 1940; appl. Mar. 29, 1938; renewed June 6, 1940). TERPENE-CYANOACYL COMPOUND AND METHOD OF PRODUCING THE SAME. Joseph N. Borglin, Wilmington, Del.—Hercules Powder Company, Wilmington, Del.—The patentee claims a new terpene compound having the type formula ROOCR'XCN in which R is a terpene radical, R' is a radical selected from the group consisting of aliphatic radicals and aromatic radicals and X is a member of the group consisting of sulfur, selenium, and tellurium. Examples are fenchyl alpha-thiocyanopropionate and isobornyl thiocyanoacetate. This new series of compounds are active insecticides.

## Develops Fire-Proof Insulation

A new flame-proofing process, called "Saferizing," for Palco wool insulation, has been developed by the Pacific Lumber Company, San Francisco, Edric E. Brown, manager of the insulation division, announced yesterday. The new process is expected to stimulate use of the product for house insulation. —*N. Y. Times.*

## 26,080 Rats' Tails Bring £217

London.—To save the salary of an official ratcatcher the Town Council of Caistor in the agricultural district of Lincolnshire two years ago offered to pay twopence each for rat tails brought into the council offices. The 1,500 townspeople had earned £217 6s 8d up to the first of this month by taking in 26,080 tails. —*N. Y. Times.*


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# Entomological Literature

Montana Insect Pests—1939-1940. 28th report of the State of Entomologist by Harlow B. Mills, State Entomologist, issued by Montana State College, Agricultural Experiment Station, Bozeman, Montana. Among other insects, the report discusses Grain Insects and their control; termites. Bulletin 384—January, 1941.

An excellent bulletin, put out by the Georgia Department of Entomology, entitled "Household Insects," written by Milledge Murphy, Jr., has been called to our attention. This bulletin may be obtained by writing to M. S. Yeomans, State Entomologists, State Capitol, Atlanta, Georgia, and asking for Bulletin No. 81.

## P.C.O.'s Grandfather A Purdue President

A book entitled "The Trustees and the Officers of Purdue University, 1865-1940," by T. R. Johnston, has recently been published. It is of significance to pest control officers, for therein we find that Prof. John S. Hougham was the first man named to the faculty and was Acting President of Purdue from December, 1875, to May, 1876. Professor Hougham was the grandfather of Jack Hougham, well-known P.C.O. of Visalia, California.

## John T. Ryan

John T. Ryan, 57, President of Mine Safety Appliances Company, Pittsburgh, died February 20, 1941, in Miami, Florida. Mr. Ryan was a graduate of Pennsylvania State College, graduating with a B.S. Degree in Mining Engineering. In 1934 he was given the degree of Honorary Engineer of Mines by the same institution. During his entire business life he was actively identified with the mining industry. From 1911 to 1914 he was in charge of the mine rescue and safety, and mine lamp testing division of the United States Bureau of Mines. In 1914 he became one of the founders of the Mine Safety Appliances Company, which today is the largest manufacturer of mining and industrial safety equipment in the world. In 1915, Mr. Ryan worked with Thomas A. Edison in the investor's laboratory at West Orange, New Jersey, on the design and development of the Edison Safety Cap Lamp, which is so universally used today in underground Coal and Metal Mines throughout the world.

In December, 1940, he was made an Honorary Member of the Edison "Old Timers' Club" comprised of the men who worked with the late inventor in his early years.

Mr. Ryan was a member of the American Institute of Mining and Metallurgical Engineers, of which he was past chairman of the coal division, the Canadian Mining Institute, the Coal Mining Institute of America, the Pittsburgh Coal Mining Institute, the Western Pennsylvania Engineers' Society, the Illinois Mining Institute, the West Virginia Mining Institute, the Rocky Mountain Coal Mining Institute, and a charter member of the National Mine Rescue Association. He was also a member of the Dequesne Club, Long Vue Country Club, Pittsburgh Athletic Association and the Sigma Gamma Epsilon Mining Fraternity.

Surviving are his widow, Mrs. Mary Gavin Ryan, a son, John T. Ryan, Jr., two sisters—Miss Ella A. Ryan and Mrs. H. J. McCarthy—all of Pittsburgh.

# WRITE FOR THESE BOOKLETS

***The latest helpful information service literature will be sent to you without cost or obligation. If in addition there are any particular pieces of literature offered by advertisers in this issue you are interested in receiving, either write them direct, or if you prefer, please send us such requests.***

***Please note, however, that you must request each booklet on a separate letterhead though they must all be mailed in one envelope addressed to Pests, 126 Lexington Avenue, New York City, N. Y.***

FUMIGATION SAFETY SUGGESTIONS

Bulletin discusses safe practices in the use of fumigants and the effects of certain fumigant products on painted walls, highly polished fixtures, also when and where to use as well as not to use.

WRITE PESTS—February-March.

MOUSE TRAP

Circular in which manufacturer claims no bait required, no blood or mutilation, automatic setting, no touching of mouse, rust proof metal construction.

WRITE PESTS—Run-Way.

Thos. W. Houchin Corp. desires to call the attention of pest control operators to the possibilities of creating additional business through the sale of powder put up in powder guns for the housewife. Most housewives would prefer such a blower even though priced a few cents more when they understand it is complete and will do the work very efficiently.

Dealers who have tried this idea claim excellent results. Write for more information with complete catalog to Houchin, c/o Pests.

DIFFICULT RAT PROBLEMS

Interesting circular which gives some constructive suggestions as to how to handle them. This circular also discusses a tenacious rat extermination product which may be used, it is claimed, with utmost safety under most any conditions.

WRITE G & S c/o Pests.

New Centrobulb, Jr., has all the features of the large professional Centrobulb in use by many of the exterminators. Since many householders do their own exterminating work and are not usually good prospects for this type of service by the professional exterminator, the manufacturer of Centrobulb, Jr., claims this type of prospect may be an additional source of profit if you will sell him the smaller bulb for his own use.

WRITE FOR FURTHER INFORMATION TO CENTRAL c/o Pests.

TORNADO ELECTRIC SPRAYERS

Descriptive literature of electric sprayers made to order for pest control work. Manufacturer states sprayers give fast, economical spraying, plus rugged durable construction. Special air volume control for regulating spray, adjustable nozzles, perfect balance and patented warming action which produces maximum kill from your insecticide. Seven models, from one pint to 1 gallon capacity, both compressor and blower type.

WRITE PESTS, Tornado.

## Business Opportunities

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**FLORIDA REPRESENTATION desired by chemical salesman of long experience. Well known all over state. Commission basis only. Prefer selling basic chemicals for manufacturing insecticides. Address B-11, c/o Pests.**

## Rat Magic

Collecting rats by the bushel is a professional job and we pass on the story of one such task as told to us. The expert first prebaited with such materials as hamburger, wieners, vegetable oil in which nuts had been fried, etc. Thus he determined what the rats in that warehouse liked. Then he supplied more of the bait they liked but with a relatively minute amount of "active agent" in it. After the weekend the stated figures were 3½ bushels of rats picked up from use of less than a pound of active agent. So the main cost of acquiring the crop of dead rats was the cost of bait and of physical labor for assembling the deceased rodents. Magic?

*—The Chemical Digest.*

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Is effective against rot-causing fungus and most wood eating insects including Lyctus as well as Termites.

Practically eliminates expensive re-treats when our simple recommendations are followed.

Phosphorous Paste for Rats and Roaches. Contains 7%-8% ZINC PHOSPHIDE with a scent very attractive to these pests. Easily diluted with water to mix with bait. Sample pound can 50c post paid. 5 lb. can at $2.00. 10 lb. can at $3.75 f.o.b. Memphis, Tenn.

**WRITE TODAY FOR COMPLETE PLAN OF DEALER CO-OPERATION**

## CRE-O-TOX CHEMICAL PRODUCTS COMPANY

**Manufacturers of Pest Control Chemicals**

**MADISON AT WILLETT** **MEMPHIS, TENNESSEE**

*Announcing...*

# KARPEX

## For the Control of CARPET BEETLES

**KARPEX** has been created exclusivey for the control of carpet beetles and is an insecticide for sprayng only. It comes in concentrated form, to be diluted 4% in insecticide base oil. While KARPEX is officially new, it has been used for field tests by discriminating Pest Control Operators for the past two years. KARPEX fills a need long desired in the Pest Control Industry. KARPEX in its finished form will not spot or stain, is non-injurious to workers, and is non-poisonous to human beings and animals. KARPEX contains 100% active ingredients.

## KARPEX W

For the Protection against **CARPET BEETLE LARVAE**

**KARPEX W** is the protection against damage done by carpet beetle larvae. It is an aqueous product, super-concentrated, and can be diluted in the proportions of 4% in ordinary city water. It contains all of the penetrants desired for a thorough job.

**KARPEX** and **KARPEX W** are priced right. We shall be glad to send you further information and working samples upon request.

## Associated Chemists, Inc.

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